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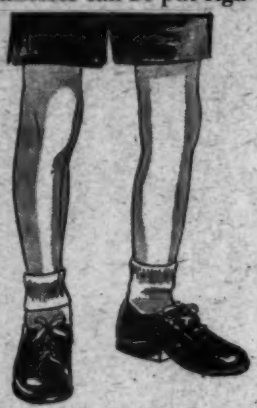

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 16 1950

APPENDICITIS

BY

Sir CECIL WAKELEY, K.B.E., C.B., D.Sc., P.R.C.S., F.R.S.Ed.

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AND

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Surgeon, South Devon and East Cornwall Hospital, Plymouth; late Surgical First Assistant, King's College Hospital

[WITH SPECIAL PLATE]

Appendicectomy is one of the commonest surgical operations performed, especially as an emergency. The Registrar-General's figures show that "in the period 1935–8 the number of deaths from appendicitis remained very constant, successive annual totals being 3,178, 3,053, 3,039, and 3,027. In the next three years a rapid fall occurred, to 2,733 in 1939, 2,465 in 1940, and 1,970 in 1941, but this was followed by a stationary period with 2,038, 1,976, and 1,965 deaths. In 1945 a further fall began, bringing the number to 1,774 in that year." The report continues, "These two changes were contemporaneous with the introduction on a considerable scale of sulphonamides and penicillin respectively. Non-civilian deaths included in the above totals in years 1939–45 were 11, 87, 97, 111, 90, 84, 71" (Registrar-General for England and Wales, 1949).

Development

The stages in development of the appendix are shown in Fig. A.

At the fifth week of foetal life the caecum appears as a small outgrowth of the wall of the primitive midgut, which is not yet differentiated into small and large intestines. This outgrowth is the same diameter throughout, equal to that of the intestine But about the eleventh week it increases in length. Even at this early stage the process differentiates into a basal fifth and a distal four-fifths, which grow differently. The basal portion grows equally with the large bowel, whereas the distal portion grows greatly in length but little in diameter. Thus at the end of foetal life the caecum is conical in shape, with its wide base joining the ascending colon and the narrow end tapering gradually into the vermiform appendix. Such a caecum is termed infantile, and persists for some time after birth. In 3% of cases such a type of caecum is found throughout life.

At the sixth or seventh month of foetal life the terminal part of the ileum adheres to the medial wall of the caecum for some distance. In addition, two folds of peritoneum—one anteriorly, one posteriorly—pass between the two parts. In such a way is future growth of the caecum regulated. As the caecum begins to expand the medial part of the wall cannot enlarge as much as the rest. The lateral part grows much more rapidly, and eventually forms the apex and most of the body of the caecum, while the original apex with the vermiform appendix is pushed into one or other of the sites mentioned below.

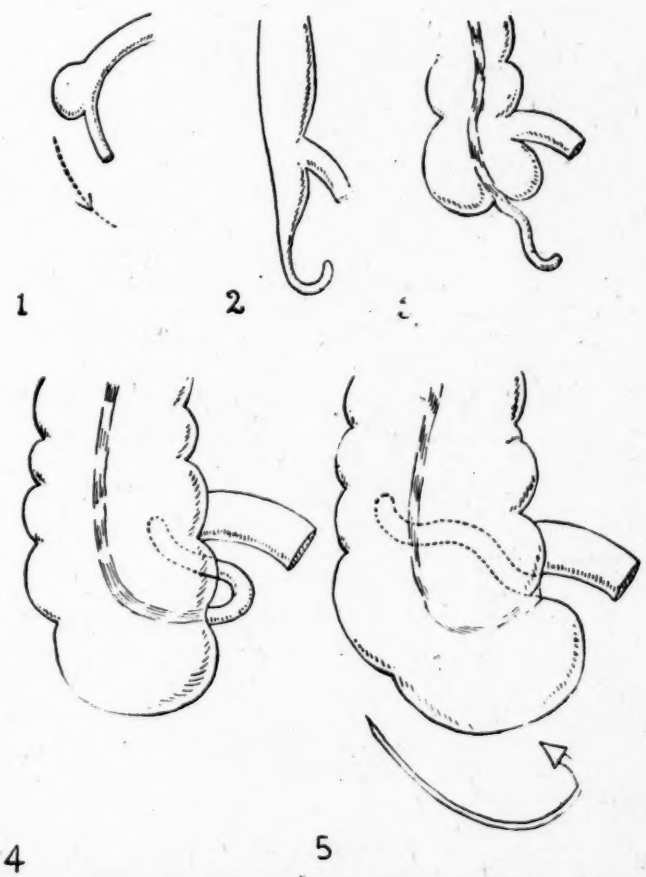

FIG. A.—Early development of the appendix, showing its tendency to become retrocaecal.

The level of the caecum varies at different periods of foetal life. At the eleventh or twelfth week it lies immediately beneath the liver and to the left of the median plane. Gradually it travels to the right across the descending part of the duodenum, and lies on the right side, and downward, to reach its adult position at birth or some time later. Descent may be imperfect, giving a high caecum, or excessive, in which case the caecum lies in the pelvis (Cunningham, 1931).

Anatomy

The general anatomy is well known and requires no discussion (Fig. B). But the site in which the appendix

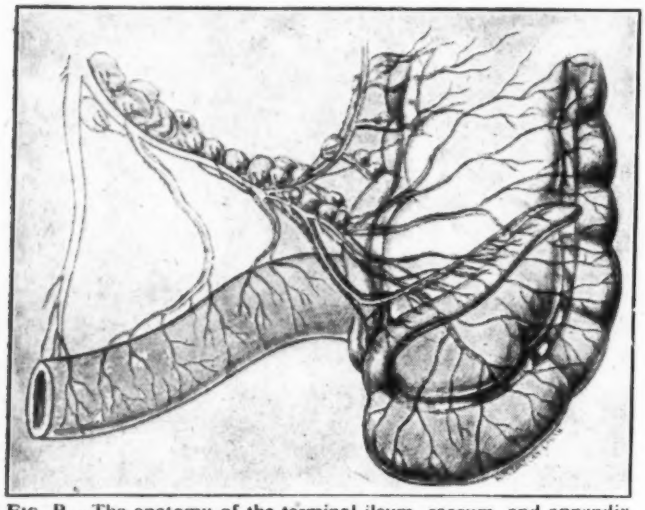

FIG. B.—The anatomy of the terminal ileum, caecum, and appendix as seen from behind.

finally settles is of importance, as the symptoms, signs, and complications of appendicitis are in some degree related to the site of the appendix.

Wakeley and Gladstone (1928) analysed 5,000 cases taken from the operating theatre, post-mortem room, and dissecting-room. Their findings are shown in Table I

TABLE I.—*Position of Appendix in 5,000 Cases (Wakeley and Gladstone)*

	No. of Cases
Anterior or pre-ileal	47 (0·94%)
Splenic or post-ileal	25 (0·5%)
Pelvic, on psoas muscle, near or hanging over brim of pelvis	1,606 (32·11%)
Subcaecal, beneath the caput caeci	101 (2·02%)
Post-caecal and retrocolic	3,219 (64·38%)
Ectopic	2 (0·04%)

In a consecutive series of 430 operations for appendicectomy performed at King's College Hospital during 1947 and 1948 the position of the appendix was noted in 171; the results are given in Table II.

TABLE II.—*Position of Appendix in 171 Cases at King's College Hospital*

	No. of Cases
Anterior or pre-ileal	7 (4·1%)
Splenic or post-ileal	13 (7·6%)
Pelvic, on psoas muscle, near or hanging over brim of pelvis	42 (24·5%)
Paracolic	7 (4·1%)
Post-caecal and retrocolic	101 (59·1%)
Ectopic—in umbilical hernia	1 (0·6%)

It is not only the site which is important surgically. In the case of the post-caecal and retrocolic appendices the relation of the appendix to the peritoneal reflection is important, for on this depends, to some extent, the likelihood of dissemination of infection into the general peritoneal cavity. Figs. C, D, and E show some of the possible relations.

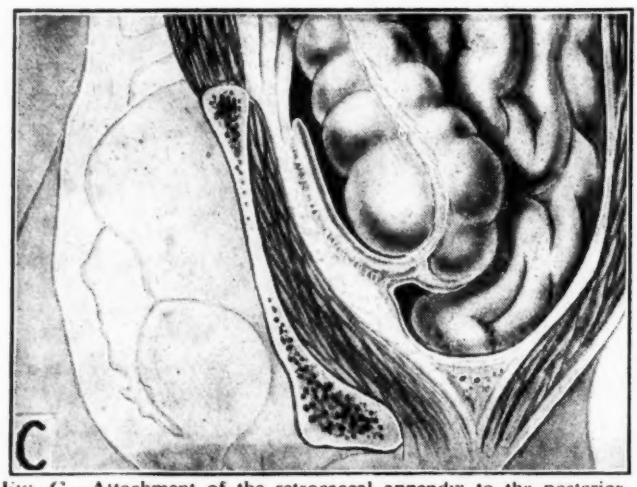

FIG. C.—Attachment of the retrocaecal appendix to the posterior abdominal wall in the right iliac fossa.

FIG. D.—The retrocaecal appendix attached to the posterior wall of the caecum

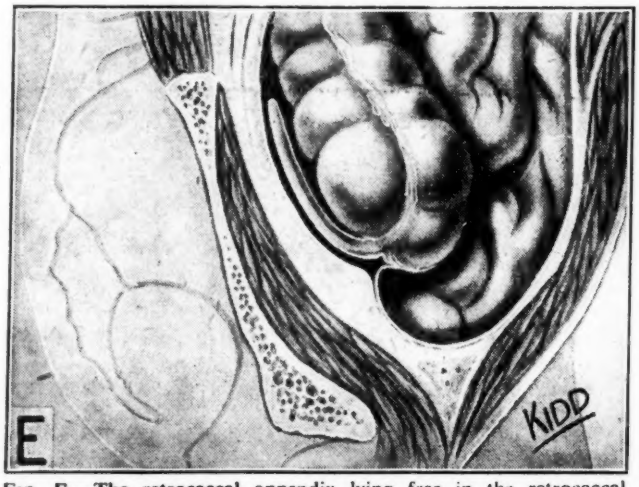

FIG. E.—The retrocaecal appendix lying free in the retrocaecal fossa.

Material.—During the 31 months, February, 1947, to August 31, 1949, 217 appendicectomies were performed by one of us. There were no deaths. It has been thought worth while to review the pathology of the appendix as illustrated in this series and to discuss the treatment of appendicitis.

SIR CECIL WAKELEY AND P. CHILDS: APPENDICITIS

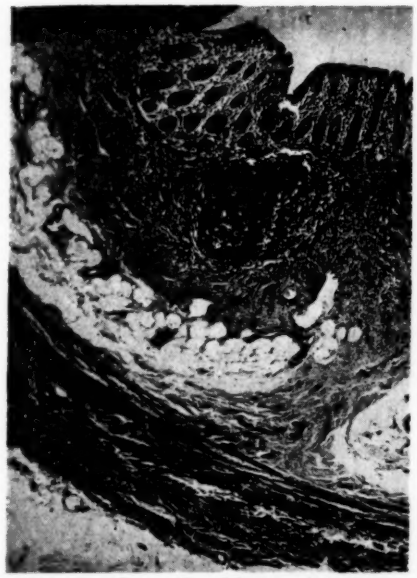

FIG. 1.—Case 40. Mucosa intact; no abnormality in the outer coats apart from vascular dilatation in the subserosa. (× 25.)

FIG. 2.—Case 206. Intense congestion of vessels of the subserosa. Muscle coat oedematous and mucosa intact. (× 25.)

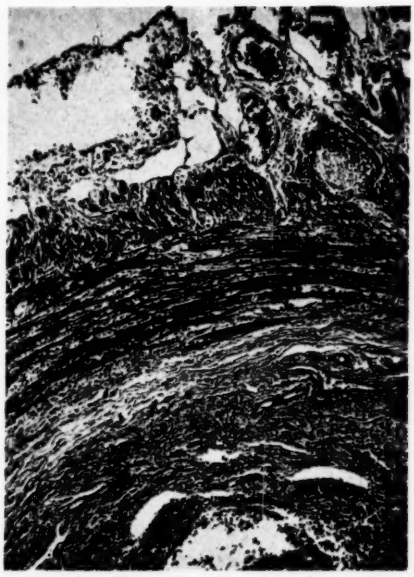

FIG. 3.—Case 17. Showing the earliest changes of an acute inflammatory reaction in subserosa and muscle coats. (× 25.)

FIG. 4.—Complete destruction of the mucosa; all outer coats are heavily infiltrated with polymorphonuclear cells. (× 25.)

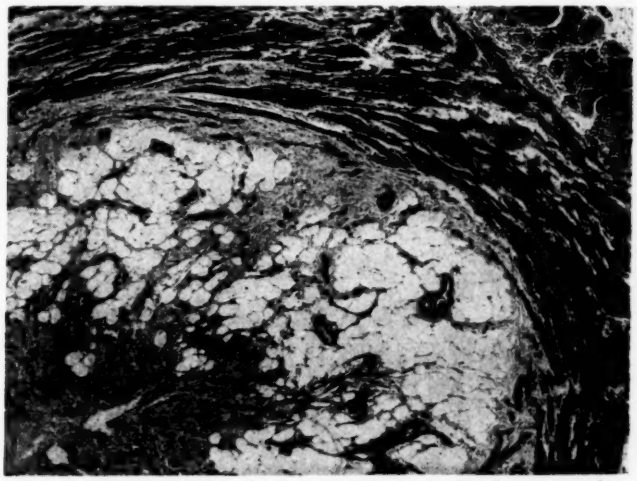

FIG. 5.—Section of the distal part of the appendix shows complete replacement of lumen and mucosa by fibro-adipose tissue. (× 25.)

A. J. N. WARRACK: TUBEROUS SCLEROSIS

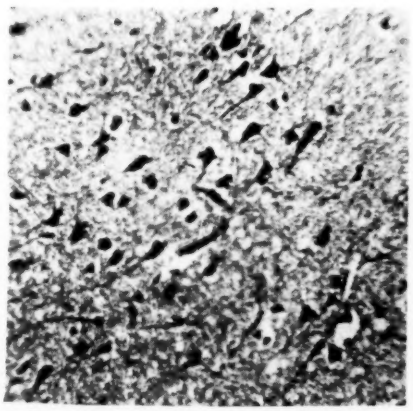

FIG. 1.—Sclerotic area immediately below surface of cortex. Phosphotungstic acid; haematoxylin. (× 300.)

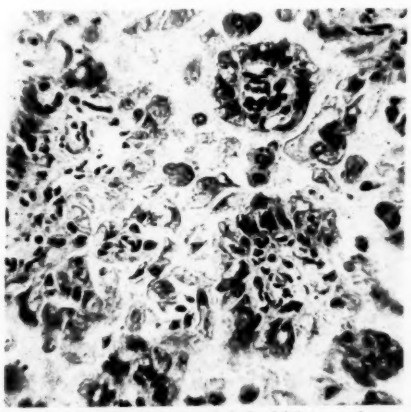

FIG. 2.—Tumour of left kidney, showing adenocarcinomatous type of growth. H. and E. (× 300.)

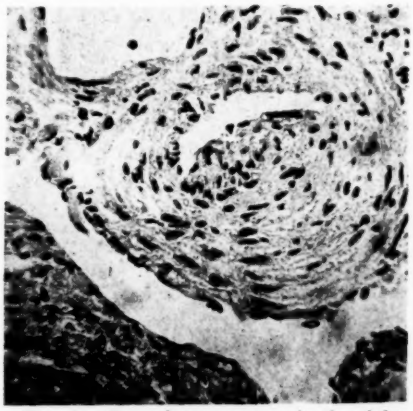

FIG. 3.—One of the tumours in the right kidney, showing vascular fibrous tissue. H. and E. (× 300.)

F. E. CRAWLEY: ERYTHEMA NODOSUM AND BOECK'S SARCOIDOSIS

FIG. 1.—Case 1.

FIG. 2.—Case 2.

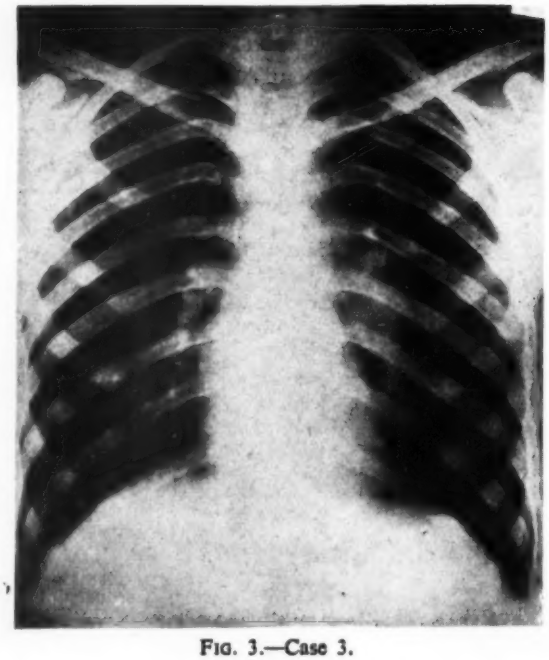

FIG. 3.—Case 3.

A. BOGDAN and J. CLARK: MANUBRIO-STERNAL JOINT IN RHEUMATOID ARTHRITIS

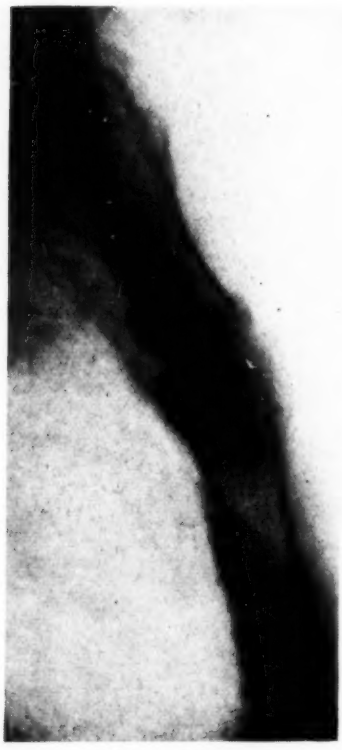

FIG. 1.—Lateral radiograph of sternum, showing irregular destruction of the articular margins of the manubrio-sternal joint (Case 1).

FIG. 2.—Radiograph showing expansion of articulating bone ends with gross irregular narrowing of the joint space (Case 2).

FIG. 3.—Radiograph showing irregular bony expansion at the joint with erosion of joint margins and irregularity of the joint space (Case 4).

FIG. 4.—Radiograph in a normal woman aged 65 showing naturally occurring synostosis of the joint. Note the smooth continuity of the bony surfaces.

Pathology in "Acute" Appendicitis

Table III sets out the pathology found in 168 appendicectomies performed as emergencies.

TABLE III

	No. of Cases
Acute suppurative appendicitis:	
Uncomplicated	61
Non-perforated, with early general peritonitis	4
Non-perforated, with abscess	2
Perforated, with general peritonitis	6
Perforated, with abscess	2
Associated with faecaliths	4
Associated with "kinking" of appendix and localized peritonitis	1
Associated with faecalith, perforation, abscess, and local peritonitis	3
Acute gangrenous appendicitis	3
With early general peritonitis	2
With faecalith and established general peritonitis	3
With abscess	1
Late general peritonitis due to acute suppurative appendicitis	2
Appendix abscess drained	4
Acute suppurative appendicitis with evidence of past inflammation	9
Vascular dilatation in the outer layers of the appendix	1
Chronic appendicitis	10
Normal appendices	15
Containing faecaliths	16
Adherent	4
Removed from children under the age of 13	10
Containing worms	1
Misdiagnoses (pyelitis, lymphoid hyperplasia of terminal ileum, pneumonia)	3
Unknown pathology	1

The earliest case operated on was that of a medical student aged 28 (Case 40). He gave a history of only 2½–3 hours, but the signs and symptoms were typical of appendicitis and he had vomited much. The pathologist's report on his appendix is interesting (Plate, Fig. 1): "An appendix 9 cm. in length. Its mesentery is very fatty. The serosal surface is congested, but the lumen is patent throughout, and the mucosa is normal. Section shows an intact mucosa and no abnormality in the outer coats apart from vascular dilatation in the subserosa. There is no inflammatory infiltration."

The exact significance of this vascular dilatation is difficult to determine. It may, in view of the shortness of the history, represent the earliest stage of inflammation. It is impossible to be dogmatic about this, but it is worth noting that in the "acute" series five cases, and in the "elective" series two cases, in which the pathologist reported macroscopically and microscopically no evidence of inflammatory change, it was noted at operation that there was abnormally marked injection of the serosal vessels of the appendix.

Whatever may be the significance of vascular dilatation, 7 of the 61 cases of acute suppurative appendicitis indicated clearly that the infection of the appendix did not begin in the lumen. In none of these appendices was the lumen in any way obstructed, nor was there evidence of involvement of the mucosa. Typical reports from pathologists are as follows:

Case 206.—A boy aged 12½ (Fig. 2). "Section shows intense congestion of the vessels of the subserosa, which is heavily infiltrated by polymorphs and covered in a few areas by fibrinopurulent exudate. The muscle coat is oedematous, and is infiltrated by moderate numbers of polymorphs. The mucosa, which is intact, is least involved by this acute suppurative process, which appears to have started in the outer layers."

Case 17.—A boy aged 15 (Fig. 3). "Section showed the earliest changes of an acute inflammatory reaction in the subserosa and muscle coats."

The shortest history in these seven cases was 12 hours, the longest four days. All patients were between 8 and 22 years of age. None complained of nausea, and there was slight vomiting in only two cases.

Two pathological reports among the remaining 54 cases of uncomplicated acute suppurative appendicitis were as follows:

Case 89.—A man aged 29, 18 hours' history. "The proximal third of a 9-cm. appendix is covered with fibrinous exudate. The lumen is patent throughout and there appears to be some diffuse superficial ulceration of the mucosa. Section shows acute suppurative appendicitis with extensive mucosal ulceration and oedema, and polymorphonuclear infiltration of all the coats of the organ."

Case 71.—A man aged 41, 12 hours' history. "The lumen of an 11-cm. appendix is patent throughout. The proximal 2 cm. shows congestion and ulceration of the mucosa. Elsewhere the mucosa is intact, but the organ is dilated. Section through the proximal part shows early ulceration of the mucosa and diffuse and focal polymorph infiltration of the outer coats."

In none of these cases was there evidence of a causative obstructive lesion. But Case 71 does illustrate how inflammatory swelling of mucosa in the proximal part may cause obstruction secondarily.

The length of history in these 54 cases lay between 8 and 48 hours. The age incidence was as follows:

0–10 years	8 cases	41–50 years	4 cases
11–20 ,,	21 ,,	51–60 ,,	1 case
21–30 ,,	15 ,,	61–70 ,,	1 ,,
31–40 ,,	4 ,,		

Where the disease had progressed beyond the stage illustrated by these 54 cases we found complications.

Acute suppurative appendicitis was found with early general peritonitis in four cases, in which a seropurulent fluid was disseminated throughout the general peritoneal cavity; the bowel was injected along its whole length. A typical pathological report was as follows (Fig. 4): "The distal half is covered with inflammatory exudate, and shows mucosal ulceration. Section shows complete destruction of the mucosa, and all the outer coats are heavily infiltrated with polymorphonuclear cells."

The history in all four cases ranged from 24 hours to 3 days. All the appendices were lying free in the peritoneal cavity, one being anterior and pre-ileal and three being subcaecal.

The acute suppurative appendix can, without perforation, give rise to an abscess. This was found in Case 23, that of a girl aged 4¼ with a 48-hour history, in whom a small abscess was walled off by omentum round an unperforated appendix. And in Case 47, a woman aged 39, with an eight-day history, an abscess was found round an appendix which the pathologist described as follows: "The distal third of an appendix 7 cm. long is surrounded by a ragged mass of haemorrhagic tissue. The lumen is patent and there is no obvious ulceration of the mucosa. Section through the distal part shows it surrounded by a mass of haemorrhagic granulation tissue which is heavily infiltrated by polymorphs. The inflammation extends through the muscle coats into the submucosa, but the mucosa is intact."

In six cases perforation of acute suppurative appendices occurred, and general peritonitis ensued, with free pus in the peritoneal cavity. In Case 85, a man aged 37 with a five-day history of pain in the right iliac fossa, the pathologist's report was: "The specimen consists of an appendix 5 cm. long. The mucosa is extensively ulcerated, and perforation has occurred in the middle third of the organ, where its wall is completely necrotic."

The length of history in these cases ranged from 36 hours to 5 days. A feature worthy of note was looseness of and frequency of motions in four of the six cases. This symptom was associated with both pelvic and retrocaecal appendices. The ages of the patients were 7, 11, 15, 36, 37, and 50 years.

In two cases of acute suppurative appendicitis, one retro-ileal with a 36-hour history, the other subcaecal with a 56-hour history, perforation of the appendix occurred with localization and formation of an abscess. Adjacent loops of small bowel formed the abscess wall.

Abscess formation is a complication of acute suppurative appendicitis, but abscess formation may itself be complicated by general peritonitis. In Case 1, that of a woman aged 62, a diagnosis of general peritonitis was made pre-operatively. At operation this was found to be due to spread from an abscess cavity lying behind the caecum; while in Case 5, that of a girl aged 17½ with an eight-day history of abdominal pain, general peritonitis was found to be due to spread from an abscess which had formed round a pelvic appendix.

Four acute suppurative appendices were complicated by the presence of faecaliths. The histories ranged from 24 to 48 hours. Vomiting was a marked feature in two cases, where the faecalith was clearly obstructing the lumen. Colic was pronounced in the third case. In the fourth case neither colic, nausea, nor vomiting was complained of.

In Case 132, that of a man aged 32 with a four-day history, the patient complained of copious vomiting and much colic, and an acute suppurative appendicitis, with a kink obstructing the lumen, and local peritonitis of the adjacent bowel were found. The appendix was lying retrocaecally.

Acute gangrenous appendicitis was found in three cases—two girls aged 17 and 14 years, and a boy aged 6. The histories ranged from 24 to 48 hours, and the appendix was in one case retro-ileal, in one pelvic, and in one retrocaecal. There was a localized peritonitis round the appendix in all three cases; in two of the cases faecaliths were obstructing the lumen. In Case 131, that of a boy aged 6 with a 24-hour history, the pathologist reported: "The lumen of a 7.5-cm. appendix is obstructed 2.5 cm. from the tip by a hard pellet of laminated faecal material. Beyond this point the wall is gangrenous, the serosa is covered by fibrinous exudate, and the lumen is filled with pus." In all these cases persistent vomiting was a marked feature.

In two cases acute gangrenous appendicitis led to early general peritonitis, with foul-smelling seropurulent fluid free in the peritoneal cavity, in 36–60 hours. In Case 60 the pathologist reported: "The appendix, 6 cm. in length, shows the typical naked-eye appearances of late acute suppurative appendicitis. Section shows almost complete destruction of all the coats of the organ." In one of these cases the appendix was retrocaecal, in the other pelvic. In one vomiting was a marked feature.

Two cases of acute gangrenous appendicitis in association with a faecalith perforated and gave rise to well-established general peritonitis, after 48 hours in one case and five days in another. In both cases vomiting was a marked feature. One appendix was pelvic, the other retrocaecal. In Case 111, that of a man aged 32 who gave a history of three days' abdominal pain but who had not vomited at all, the pathologist reported: "The mucosa of the proximal half of the appendix is dark and ulcerated. The wall is thickened and the serosa covered by exudate. Beyond this the lumen is obstructed by a faecalith, and beyond this faecalith the wall is thin, completely necrotic, but not yet perforated.

In Case 40, that of a man aged 72 with a five-day history, a gangrenous retrocaecal retroperitoneal appendix was found surrounded by an abscess.

In four cases of appendix abscess which were drained only, the appendix was removed at a later date. In Case 204, that of a woman aged 49, the pathologist's report on the appendix removed one year later was: "The wall of the appendix is thickened, and the lumen of the terminal ¾ in (1.9 cm.) is obliterated. No section was made."

In Case 55, that of a man aged 46, the pathologist reported six months after the abscess was drained (Fig. 5): "The middle part of an appendix 4 cm. long is replaced by a thin fibrous cord, and the distal part of the lumen is obliterated. Section of the distal part shows complete replacement of the lumen and mucosa by fibro-adipose tissue."

Perhaps the most intriguing finding is in Case 29, that of a boy aged 3 years who had an appendix abscess drained, and four months later had his retrocaecal appendix removed. The pathologist reported: "The specimen consists of an appendix 4 cm. in length. There is some patchy congestion of the serosa. The lumen is patent throughout. The mucosa and muscle coats show no naked-eye abnormality. Section shows an intact mucosa with no evidence of past or recent inflammatory change in the submucosa or subserosa."

There were nine cases in which acute suppurative appendicitis was found in appendices showing evidence of previous pathological change. In Case 195, that of a woman aged 63 who had a long history of dyspepsia and a recent history of 48 hours' pain in the right iliac fossa, there was localized peritonitis, and free pus was found round an anterolateral paracolic appendix, the lumen of which was obliterated, while the tip was patent, the site of acute suppurative appendicitis, and perforated. She had not vomited. In contrast, in Case 129, that of a woman aged 43 with a 24-hour history, acute suppurative appendicitis was found in the proximal part of the appendix, the tip of which was not inflamed. She had vomited much, and had looseness and frequency of bowel motion. In two other cases the distal part of the appendix was obliterated by fibro-adipose tissue, while the proximal segment was the site of an acute suppurative process. In two others there was proximal obliteration of the lumen, with a distal acute suppurative process. In three cases there was thickening of the wall with subserosal and submucosal fibrosis. In at least one of these cases there was no previous history of abdominal pain.

In the 10 cases reported as chronic appendicitis by the pathologist, the lesions found were: submucosal fibrosis in six cases; subserosal fibrosis in five cases; and obliteration of the lumen, in part, in seven cases.

In Case 92, that of a woman aged 34 with a history of previous attacks and a recent history of 24 hours, the report was: "The middle quarter of an appendix 5 in. (12.7 cm.) long is almost obliterated, and reduced to a thin cord. There is slight dilatation beyond this, and it contains mucoid material. Section shows well-developed submucosal and subserosal fibrosis." Such an appendix might well have developed into a mucocele of the appendix.

Pathology in "Chronic" Appendicitis

Table IV shows the pathology of the appendix in those cases in which it was removed as an elective procedure (39 cases).

TABLE IV

Acute suppurative appendicitis	4
Chronic appendicitis	9
Vascular dilatation of outer layers of the appendix	2
Normal appendix	12
Normal appendix containing faecaliths or inspissated faeces	7
Normal appendix associated with kink	1
Normal appendix associated with adhesions	4

There were four cases in which the appendix showed acute suppurative appendicitis.

Case 80.—A woman aged 41 had had attacks of pain in the right iliac fossa on and off for four years. Her first attack began with pain in the right iliac fossa, and later she felt sick and vomited several times. The second attack was two years later. It lasted for two days with pain which was not so severe as in the first attack. She felt some nausea but did not vomit. Her tongue felt "rough," her appetite was poor, and she felt constipated. Since then she has had frequent mild attacks of similar character at intervals of three to six months, and in the last attack she had some diarrhoea.

Examination on admission showed only one abnormal finding —namely, tenderness in the right iliac fossa. Operation showed the appendix to be adherent in the pelvis. The pathologist reported: "The lumen of the 6-cm.-long appendix is patent throughout. The mucosa and outer coats show no macroscopic abnormality. Section shows a very early stage of acute suppurative appendicitis with focal polymorphonuclear infiltration in places. The lumen contains purulent exudate, and there is oedema of the outer coats."

In the other three cases intermittent pain in the right side was the only prominent symptom, and tenderness in the right iliac fossa the only sign. In one case the barium meal and follow-through examination was negative, and in one the radiologist reported chronic appendicitis. In all three the pathologist reported acute suppurative appendicitis with ulceration of mucosa.

In the nine cases reported by the pathologist to be chronic appendicitis the lesions found were: obliteration of the lumen by fibro-adipose tissue, five times; submucosal fibrosis, five times; and subserosal fibrosis, three times.

In both the "acute" and the "chronic" series there were appendices which were normal macroscopically and on histological examination. The significance of such "lily white" appendices has been discussed elsewhere (Childs, 1949).

Mode of Infection

In this series of cases evidence is heavily in favour of infection by the blood stream. Those appendices showing early changes have changes in the outer layers. Inflammation and ulceration of the mucosa occur relatively later in the disease.

Mechanical obstruction of the lumen of the appendix does not seem to play any part in the initiation of acute appendicitis. When acute suppurative infection occurs in an appendix which shows evidence of previous inflammation it is as likely to be found proximal to an obliterated part of the lumen as it is to be found distal (See Cases 195 and 129 above). When the infection is distal to an obliteration of the lumen the mechanical obstruction produces a secondary effect. It causes a rise in tension in the distal part, and perforation may result therefrom. It is our impression that faecaliths play no part in the initiation of disease; but when the appendicular tissues around a faecalith become swollen and infiltrated the faecalith acts as an immovable object and causes pressure necrosis and perforation. It is significant, too, that faecaliths are so often found in association with acute gangrenous appendicitis.

Those cases of acute suppurative appendicitis in which there is no perforation but a localized or generalized peritonitis or an abscess also point to blood-stream infection; for in these cases it is sometimes found that the mucosa of the appendix is not involved in the inflammation.

In none of our cases has there been any evidence to suggest spread of infection from within the lumen of the appendix.

Diagnosis

It is not our intention here to recapitulate the signs and symptoms of appendicitis. They are well known. But we do wish to emphasize one or two points. In a case of uncomplicated appendicitis there is no place for "expectant" treatment. The case is one of acute appendicitis requiring urgent operation, or it is a case of chronic appendicitis in which operation may be performed as an elective procedure. There are several features of the presentation of the case which may help in the making of a decision:

(*a*) Where symptoms which were intermittent have become constant or more frequent, or where there has been sudden and definite aggravation of the symptoms, operation should be regarded as urgent.

(*b*) Where fetor of the breath is appreciated, pungently but not constantly, just as one appreciates the scent of roses on a summer evening, operation must be considered urgent.

(*c*) Absence of pyrexia has no significance, but when slight pyrexia is associated with the signs and symptoms of appendicitis operation must be looked upon as urgent.

(*d*) Where vomiting and looseness of the bowel are prominent features of the history operation should be regarded as urgent.

(*e*) When pain is experienced in the left iliac fossa and maybe spreads upwards to the left costal margin, but is associated with tenderness in the right iliac fossa, the appendix will be found lying in the pelvis and extending across the midline. Operation should be considered urgent in such cases.

(*f*) In children, if it is thought that they may have appendicitis, operation is always urgent.

(*g*) The path of development of the appendix must be remembered. Where the caecum is undescended an appendicitis may give rise to pain and tenderness high up under the costal margin; or the caecum may have descended into the pelvis, and tenderness may be found only per rectum.

Treatment

1. *Chronic Appendicitis.*—Elective appendicectomy was performed through a muscle-split incision in the right iliac fossa. This incision was used in females as well as males whenever the diagnosis was assured. The wound was closed without drainage and the patient was allowed—nay, rather encouraged—to walk the next day, and if home circumstances were satisfactory the patient was sent home on the third or fourth post-operative day. A paramedian incision was used only rarely, when it was thought desirable to explore the abdomen.

2. *Acute Appendicitis.*—Urgent appendicectomy was performed through a muscle-split incision in the right iliac fossa. The muscle split incision can readily be converted, for greater ease of access in difficult cases, into a muscle cut as used by the Newcastle school and originally described by Rutherford Morison. The peritoneum was closed without drainage. The skin was also closed without drainage unless it was thought that it might have been contaminated. In the event of complications being found at operation, treatment was modified as follows:

(*a*) If there was an appreciable quantity of seropurulent fluid in the abdomen, with an early general peritonitis, the peritoneal cavity was cleared of this, so far as was possible, by sucker and gauze mops, particular attention being directed to the pelvis and the right paracolic gutter. The peritoneum was closed without drainage, but the wound was drained. The patient was treated post-operatively with continuous gastric suction, nothing by mouth, and intravenous saline and glucose-saline, until the gut moved again spontaneously.

(*b*) Where appreciable involvement of adjacent viscera by local peritonitis was found the appendix was removed, 10 g. of sulphathiazole and penicillin powder dusted over the affected area, the peritoneum closed without drainage, and the patient

treated post-operatively with continuous gastric suction, nothing by mouth, and intravenous saline and glucose-saline. Only in the more severe cases were systemic penicillin and sulphadiazine given.

(c) Where an abscess was found surrounding the appendix the appendix was removed whenever possible, the cavity cleared of sloughs (and faecaliths, if present), 10 g. of sulphathiazole and penicillin powder was dusted into the cavity, and the peritoneum was closed without drainage, but the wound was drained. The patient was given penicillin and sulphadiazine systemically, post-operatively. And if the abscess was not completely retrocaecal, post-operative suction and intravenous drip therapy was used.

3. Where the patient presented as a case of well-established late general peritonitis it was not possible to be certain pre-operatively that the appendix was the cause. Paramedian incision was used in these cases; a drainage-tube was placed in the pelvis and a stab drain into the right iliac fossa, and the wounds were closed. The patient was given systemic penicillin and sulphadiazine and treated with gastric suction and intravenous drip therapy. The appendix was removed through a muscle-cut incision in the right iliac fossa later.

4. Where the patient presented with an appendix abscess, a muscle-split incision in the right iliac fossa was used. The appendix was not removed unless it was readily accessible. If the appendix was not removed a drain was placed into the abscess cavity after it had been cleared of pus and sloughs (and faecaliths, if present). If the appendix was removed the cavity was dusted with penicillin and sulphathiazole powder, and the peritoneum closed without drainage, though the wound was drained.

Complications

In our series there were no deaths. Table V gives a list of the complications which developed post-operatively.

TABLE V.—*Post-operative Complications*

Respiratory	Slight	3
	Moderate	7
	Severe	1
Wound infection	Slight	6
	Severe	6
Persistent sinus		1*
Pelvic abscess		3†
Thrombophlebitis in calf		1
Penicillin urticaria		2
Irritation of skin due to penicillin		1
Prolapse of omentum along drainage-tube track		1

* Actually shown by lipiodol injection to be a fistula leading through the appendix into the caecum, following drainage in an eight-day case of general peritonitis. There was no faecal discharge.

† All cases of general peritonitis—1 developed on fifth day and discharged P.R. on tenth day; 1 developed on seventh day and discharged P.R. on eleventh day; 1 developed on 24th day and resolved by 36th day.

Mortality before the Advent of Sulphonamide and Penicillin Therapy

Bailey (1932) reported a mortality of less than 1% in those cases of acute appendicitis operated on within 12 hours of onset. If operation was delayed until 36 hours after onset the mortality rose to 11–18%. Peritonitis was the cause of death in more than 80% of fatal cases. Christopher and Jennings (1932) reported a mortality of approximately 5% in cases of acute appendicitis.

Holcomb (1932) reported 5 deaths in 153 (3.3%) cases of acute appendicitis. One death occurred in a case of acute suppurative appendicitis, three in cases with perforation and general peritonitis, and one in a case with gangrenous appendicitis and general peritonitis. Rayner (1933) had 17 deaths in 347 cases (4.9%); the proportion of "early" cases in the series (that is, within 24 hours of onset) was 25%. Garlock (1934) reported a mortality of 4.6% in 433 cases. Nuttall (1934) quotes McNeill Love: operation on first day, 1.1% mortality; on second day, 2.8% mortality; on third day, 10.3% mortality.

Comment

In 1932 Shipley and Bailey were advising strongly against the use of drainage-tubes inside the peritoneal cavity. They increase the formation of adhesions and the liability to the production of post-operative obstruction. They need only be used, in our experience, in those cases in which the appendix is not removed.

Peritonitis was the commonest cause of death in days gone by. Provided the appendix is removed or the site of the appendix is drained, few patients need now die of peritonitis if systemic sulphonamide and penicillin therapy is used, the bowel is put completely at rest by the use of continuous gastric suction, and intravenous fluids are given to maintain the electrolyte balance until the bowel moves once again of its own accord.

Since McNeill Love (1933) advocated expectant treatment for cases of appendicitis with localized peritonitis, the following have been added to the surgeon's armamentarium: sulphonamides, penicillin, intravenous drip therapy, and gastric suction.

This new armamentarium has increased the safety of immediate operation in the presence of localized peritonitis. In the above series of cases, expectant treatment was practised only three times; in all three cases—two of abscess and one of appendix mass—the local signs indicated spread during the time the patient was watched, and operation was therefore performed.

Conclusions

Early diagnosis and early operation remain the most important factors in reducing mortality due to appendicitis.

If the diagnosis is appendicitis, and if it is clearly not chronic, operation is urgent. There is no place for expectant treatment.

Sulphonamide and penicillin should be used locally in the peritoneal cavity if there is an abscess or much local peritonitis, but the peritoneal cavity should never be drained if the appendix has been removed. Sulphonamide and penicillin should be given systemically whenever inflammation is widespread.

If there has been soiling of the general peritoneal cavity, or involvement of loops of small bowel in local peritonitis or in the wall of an abscess cavity, treat the patient with continuous gastric suction and intravenous drip therapy post-operatively until the bowel moves again of its own accord.

Always drain the wound if there is danger of contamination.

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CARE OF THE TUBERCULOUS IN THE HOME*

BY

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At the end of 1948 there were approximately 210,000 cases of tuberculosis on the dispensary registers; 180,000 of these were respiratory tuberculosis, and about 100,000 of them were expectorating tubercle bacilli. Every one of these cases was a potential source of spread of the disease. At the same time approximately 30,000 beds were occupied by patients suffering from respiratory tuberculosis; about one-third of these patients would not be infectious, so that 20,000 of the positive cases were in-patients, leaving 80,000 patients, most of whom were expectorating tubercle bacilli, among the general population. This is a minimum figure, as mass radiography surveys show that there are at least three unknown cases with active disease among every 1,000 adults between the ages of 15 and 45. If these are taken into account another 57,000 persons must be added, making a grand total of 137,000 cases of respiratory tuberculosis with active disease under domiciliary conditions. It is the care of this great army of infectious and potentially infectious persons that is the problem we have before us.

It will not be denied that every case with a positive sputum constitutes a public health problem, and in most instances a medical one, too, so that the subject is of major importance in any tuberculosis scheme. Curiously enough, the attention given to it bears little relation to its magnitude and significance. The problem has come into prominence in recent years because of the shortage of institutional beds. We have been forced to treat patients in their homes, and we are finding out that much can be done to benefit them: in some instances actual recovery can be effected without resorting to institutional care. The number of patients treated in their homes who return to normal life and work without danger of spreading tuberculosis to their fellows is increasing every year. This is a most significant change in tuberculosis administration, and will have a profound effect upon the future development of public health programmes.

Approach to the Problem.—The problem may be approached from two points; first, from consideration of the requirement of the individual to recover or maintain a good state of health; and, secondly, from the need of the community as a whole to be protected from the risk of contracting the disease. In other words, we have the curative aspect and the preventive aspect, neither of which must be allowed to eclipse the other.

The Curative Aspect

Although the results of domiciliary treatment are becoming known, most persons suffering from tuberculosis are still recommended for a period of sanatorium treatment. It is possible that this slavish adherence to the prescribing of this form of treatment has become a habit, and a more enlightened approach to the management of all cases might be established by asking ourselves in every case if sanatorium treatment is really necessary. In present circumstances, whatever the answer may be, most patients will be treated at home for a long period. It is only recently that the problem of pre-sanatorium domiciliary care has become a matter of importance, and we must realize that it has come to stay for a number of years. It is therefore worthy of close attention and detailed study.

Pre-sanatorium Period

When tuberculosis has been diagnosed the management of the case will depend greatly on the social circumstances; but, whatever these may be, it is essential that the family appreciates the implications of the diagnosis and that certain obligations fall on all its members to play their part in assisting the patient towards recovery. In this matter it is highly probable that the general practitioner can be of considerable help, as he usually has a better acquaintance with the individual peculiarities of each member of the family, and knows best how to deal with them. It is important, however, that the chest physician and the general practitioner agree on the line of treatment to be pursued. A most unfortunate situation would arise if the former advocated rest in bed and quiet, whilst the other recommended basking in the sun on the hill-tops. It is hoped that neither of these physicians will cause unrest and discontent by arguing with the patient and members of the family about the National Health Service Act, and enlarge upon the fact that there are not enough sanatorium beds to allow for the immediate admission of patients to institutional treatment. However much we may fume within ourselves, such agitation does nothing but harm if passed on to the patient.

It will be agreed that during this pre-sanatorium period, which may be as long as nine months, the one important lesson the patient has to learn is the need for rest of both mind and body. Every instruction and piece of advice to the family must be designed to promote an atmosphere of calm patience in the home, thus providing the foundation on which treatment depends—treatment that quite often reduces the duration of the subsequent period at a sanatorium and sometimes eliminates the necessity for it altogether. I would say that three essentials in successful home treatment are (1) the full co-operation of the patient and the family; (2) freedom from financial anxiety; and (3) the possibility for the patient to obtain the necessary rest in bed. There are other essentials; but these are of primary importance, and without them success cannot be obtained. Adequate physical rest is complementary to peace of mind, and the spectre of want can easily destroy both.

In some homes it is impossible to create an atmosphere that is conducive to recovery. The experienced chest physician will soon become aware of this and not attempt the impossible. Patients in these households must be sent to sanatorium or hospital to escape the nerve-racking of such conditions, the most frequent cause of which is overcrowding. Where this exists, domiciliary care is extremely difficult, and priority of admission to an institution should be given to all such cases. If this is not done, money and labour will be wasted, for domiciliary treatment costs money and involves a great deal of work for the staff of the chest clinic.

It is a big mistake to think that treatment of patients at home can be organized without considerable expenditure, and both regional hospital boards and local health authorities must be prepared to vote money so that the necessary facilities may be provided. It is cheaper than sanatorium treatment, but that does not mean that it costs nothing. Money must be found to provide an adequate

*Read in opening a discussion at a combined meeting of the Sections of Diseases of the Chest and Tuberculosis and of Preventive Medicine at the Annual Meeting of the British Medical Association, Liverpool, 1950

ambulance service, sufficient home helps, good equipment for the chest clinic, and enough health visitors and handicraft instructors to give every patient the full attention he needs. Home helps are the key to the problem of relieving the patient of domestic worries. We all know how difficult housekeeping has become these days. If the patient happens to be the mother of the family, she can obtain no rest without a generous provision of labour in the form of home helps. To start a scheme of domiciliary treatment without home helps is like running an engine without oil.

Domiciliary care becomes increasingly difficult with the lowering of the standard of living and the morals of the home. In fact, in certain areas the factors that we know to be the predisposing causes of tuberculosis are present to such a degree that it is useless to try to establish domiciliary care until they are removed. In this problem, as in others connected with tuberculosis, we must be realists and deal with fundamentals, otherwise we shall waste much money in attempting to achieve the impossible.

Special Treatments

There are, however, homes in which domiciliary treatment can be carried out with success; and where this is so the enthusiastic physician will often be of the opinion that, although adequate rest has been secured for the patient, more can be done by the application of special treatments in the form of collapse therapy, postural rest, and antibiotics and chemotherapeutics. It must be realized that the inability to exercise close supervision over the patient introduces an element of risk into the administration of special treatment in the home. If there is sufficient staff at the chest clinic to provide frequent visits to the patient, and a good ambulance service to ensure the attendance of the patient at the clinic for adequate radiographic control, then much can be done to reduce these risks to a minimum.

Active domiciliary treatment throws a great strain on the chest clinic and a considerable amount of extra work on the staff. We all know that with collapse therapy certain complications often arise. Adhesions need cutting, fluid has to be aspirated, phrenic operations may be necessary, and, occasionally, emergency admission to hospital must be provided owing to the development of an empyema or a bronchial fistula. These complications can be avoided by inducing a pneumoperitoneum instead of a pneumothorax, but even here it is usually necessary to have the services of a surgeon.

Existing Schemes

Three different schemes have been developed to provide special treatment in the home during the pre-sanatorium period. In Glasgow in 1943, under the direction of A. Maclean and J. S. Gemmill, four beds were reserved in Baird Street Auxiliary Hospital, to which selected patients awaiting admission to sanatorium, and suitable for collapse therapy, were admitted. Artificial pneumothorax was induced on the day of admission, and the first and second refills were given on the following days. Some hours after the second refill the patient was sent home by ambulance, and rest in bed continued at home; refills were given at the hospital on the fifth or sixth day after induction and subsequently at weekly intervals. A report on 150 consecutive cases treated in this way shows that 20 to 33 months after induction the result was satisfactory in 82 cases, and in 65 (43%) recovery was obtained without any institutional treatment (Maclean and Gemmill, 1948). Sputum conversion occurred in at least 36%.

A modification of the Glasgow scheme has been adopted by Wynn-Williams, Shaw, and Mashiter (1950) in Bedfordshire, where selected patients suitable for collapse therapy and others in need of emergency treatment, are given priority of admission to sanatorium, but when they are ambulant for two hours they receive their discharge to enable treatment to be carried on at home, with medical supervision at the chest clinic or sanatorium. In this scheme chronic cases with good home conditions are not admitted to institutional beds, but are given necessary treatment at home. In selected cases phrenic crush, pneumoperitoneum inductions, and bronchoscopies are performed on out-patients.

Heller (1949), at Hounslow, induces artificial pneumothorax or pneumoperitoneum, and is not averse to giving streptomycin while the patient is under domiciliary treatment. Phrenic crush is performed on selected cases in the out-patient department. Of the 50 cases in which artificial pneumothorax treatment was attempted, a successful induction was obtained in 33, and the disease was arrested in 11 and made quiescent in 19. Five of the artificial pneumothorax cases developed fluid. Pneumoperitoneum was induced in 150 cases and had to be abandoned in only 11. Eight of the artificial pneumothorax cases were treated entirely at home, and 25 were admitted to sanatorium for short periods for adhesion section.

James Cuthbert (1950) by careful selection of cases has had good results when admitting patients to hospital for successive periods of from three to five nights for the induction of a pneumoperitoneum with a phrenic crush, later for artificial pneumothorax induction, and, finally, if necessary, for adhesion section. In this way collapse therapy is established without undue risk while the patient is at home, and the danger of the development of progressive disease during the waiting period before sanatorium treatment is considerably diminished.

Toussaint has carried out domiciliary collapse therapy for a number of years, and at Tottenham he has been giving artificial pneumothorax and pneumoperitoneum treatment whilst the patient remained at home. He has had very encouraging results, achieving quiescence in 60% of cases. The organization of the scheme is worthy of close study, as it is a model of its kind. While in no way detracting from the value of the work, it must be noted that the Willesden Chest Clinic is very well staffed, the Central Middlesex Hospital is most co-operative in every way, the services of a thoracic surgeon are readily available, the area served by the clinic is mainly of the artisan and lower-middle-class type, and, most important of all, a large number of home helps are available. These conditions and facilities are not always easy to obtain, but that does not mean that we should be deterred from extending the trail that has been blazed by the enthusiastic work of an energetic chest physician. To-day domiciliary treatment is a necessity, and Toussaint has shown us what is needed to produce good results.

Administration of Special Treatments

It will be agreed that, although the administration of special treatments under domiciliary conditions may not be a method of choice and has been adopted only because the bed situation causes such a long waiting period for admission to sanatorium, it can nevertheless be carried out successfully and be of benefit to the patient. Those who have practised it are unanimous on four points: (1) it throws a very heavy strain on the staff of the chest clinic; (2) the chest clinic must be well equipped; (3) it is necessary

to have a good and efficient ambulance service at the disposal of the chest physician; and (4) the latter must have complete control of the patient during domiciliary treatment and during periods of admission to sanatorium or hospital for special procedures. There must therefore be close co-operation between the chest physician and the medical superintendent of the hospital.

To these points I would add that the services of a thoracic surgeon must be available when required, and the local health authority should show a sympathetic interest in the work and provide the means to enable the patient to procure adequate rest at home. I would emphasize that in all domiciliary treatment there must be complete agreement and mutual co-operation between the local health authority and the regional hospital board, as each of these bodies has a special responsibility in the matter, and if quibbling about payments and providing services is allowed to arise, administration of the scheme will be difficult and probably impossible.

Very little has been written on the administration of streptomycin and P.A.S. under domiciliary conditions, but there is no doubt that these drugs are being tried on an extending scale now that both are cheaper and are available to all. There is no objection to the use of P.A.S. in domiciliary treatment, except that the drug's efficiency when used alone is still debatable; but streptomycin is in a quite different category, and if indiscriminately prescribed can do more harm than good. The use of streptomycin should be controlled by drug-sensitivity tests, and a careful watch should be made for the development of complications. These precautions are difficult to maintain under domiciliary conditions, but the neglect of them may mean on the one hand the infection of other individuals with drug-resistant bacilli, and, on the other, distressing sequelae to treatment. It is therefore permissible to use streptomycin in home treatment only in the circumstances in which these conditions can be met.

Lesions of the respiratory tract are an exception to this rule. Cases of tuberculous laryngitis, particularly those with dysphagia, and cases of tuberculous tracheobronchitis or bronchitis, respond so remarkably to streptomycin that its use under domiciliary conditions is justified. I think, however, that it would be a wise policy for all general practitioners wishing to use the drug in respiratory tuberculosis to consult the chest physician before starting treatment.

Prevention

As we are still considering the management of the patient prior to admission to an institution, it is necessary to refer to prevention of the spread of the disease. The diagnosis of active tuberculosis in one member of the family places the others in the category of contacts, requiring full medical examination, including tuberculin-testing. This should be carried out on adults as well as children, and the negative reactors should receive B.C.G. vaccination. This is not the time to discuss the need or practicability of segregation, but one is inclined to the view that, although segregation is desirable, vaccination without segregation is better than no vaccination at all.

In addition to the well-known precautionary measures that should be taken to prevent the spread of infection, I should like to put in a plea for a more systematic development of facilities for educating the family, and in particular the housewife, in domestic economy and the special points in household management that are associated with the presence of a tuberculous person. There must be much that the average housewife could learn which would improve the nutrition of the family and add to the comfort and well-being of the patient and others in the house.

I would also ask for biological and biochemical research into the reason why some members of a household develop the disease while others escape active infection and in some instances even fail to exhibit tuberculin sensitivity though they have been living in contact with an open case for a long period. The detailed study of family units would reveal facts which would be helpful in solving some of the problems of the pathogenesis of the disease.

Post-sanatorium Treatment

The problems of the post-sanatorium period of domiciliary treatment differ considerably from those associated with the person awaiting admission, for the patient will either have recovered sufficiently to need rehabilitation or be a chronic invalid, ambulant for only short periods or completely bedridden. The patient may be infectious or non-infectious, but it is well to remember that the ambulant infectious case spreads the disease to a much wider circle than the bedridden one; therefore our preventive measures must not neglect control of the habits of the ambulant person. It is probable that the bedridden patient can do little harm if he has a room to himself and is not allowed contact with children and Mantoux-negative persons.

The problem of the prevention of the spread of infection should be simpler in the case of the patient who has received sanatorium treatment, as we should be able to assume that he has had a thorough instruction during the course of treatment. In view of the frequency with which the child of an ex-sanatorium patient develops tuberculous meningitis even in a reasonably good home environment, some doubt may be expressed on the efficiency of this tuition. The fault may be in ourselves in that we do not instruct the patient carefully and thoroughly enough for him to retain the essentials of the precautionary measures we wish him to put into practice in his home.

Evidence that control of infection in tuberculous households is possible is found in the fact that no case of meningitis or miliary tuberculosis has developed among the children of the tuberculous households in our village settlements; showing that there need be no danger from living with open cases of tuberculosis if there is willing co-operation and understanding of the problem by the patient and members of the family. We must therefore ensure that they are all properly instructed.

In addition to prevention of spread of infection, the ambulant or semi-ambulant case presents many problems. The presence of an idle person with a well-developed invalid complex is a great trial to the other members in any household, particularly if there is any degree of overcrowding. Sheltered employment for such patients relieves the situation to a considerable degree. It is unfortunate that the development of organized schemes to provide rehabilitation that leads to employment has been so slow. This is mainly due to the reluctance of local health authorities to shoulder the responsibilities which the Act permits them to assume with regard to aftercare, which, of course, includes rehabilitation.

The value of diversional therapy to bed patients is well known, yet there is little enthusiasm for the development of home handicrafts. I admit that this is an expensive venture and must not be expected to bring in any financial return. It is difficult to organize, and to be successful it should be controlled from the chest clinic, if possible in connexion with a municipal workshop. All this involves

considerable expenditure; but does not the comfort and welfare of these patients, whom we are forced to treat at home through lack of beds, mean nothing to those responsible for their domiciliary care? Cannot some of the money which would have been expended on them had they been admitted to a sanatorium at anything from £6 to £10 a week be expended on developing efficient domiciliary treatment?

In answering these questions we come up against the difficulty that the money not being expended on institutional treatment is the concern of the regional hospital boards, and the cost of domiciliary care is largely borne by local health authorities, so that the adjustment is complicated. It is another instance in which the dual control operates against the benefit of the patient.

During the post-sanatorium period rehabilitation is of the highest importance. The National Health Service Act places this responsibility on the local health authority. The National Assistance Act provides for financial relief in cases of need and has made the National Assistance Boards responsible for the provision of the benefits that were scheduled in Memorandum 266T of the Ministry of Health. Under the Disabled Persons Employment Act, 1944, the development of sheltered industries can take place on a commercial basis, and the Ministry of Labour and National Service can give adequate financial assistance, both to the disabled individual under training and to the rehabilitation centre, for the provision of facilities to overcome the loss of working power which the disability has caused. The stage is therefore set for the development for the tuberculous in this country of the finest rehabilitation service in the world if we will only take full advantage of the powers that are provided in the Acts mentioned.

Drawbacks of Dual Control

It is not always realized how great is the change in environment for a patient who is discharged from a sanatorium and returns to an urban home. The frequency of relapse during the first year after discharge from the sanatorium shows how serious the strain can be, and how unfitted some patients are to withstand the stresses and anxieties of normal life. It is one of the disadvantages of sanatorium treatment that recovery takes place in conditions that are totally different from those under which the patient normally lives. For such a patient the first few months of domiciliary care should always be regarded as a transitional stage during which the closest clinical observation is maintained and wherever necessary sheltered employment provided until stabilization under home conditions is assured. In this way many relapses could be prevented, but it can be done only through the recognition by regional hospital boards and the local health authorities that rehabilitation is an essential part of treatment. Rehabilitation does not begin when sanatorium treatment ends, but both run concurrently from diagnosis until the disease is arrested.

It has been stated on many occasions that the most urgent need in tuberculosis at the present time is an adequate supply of nurses. This, indeed, is a necessity in order to provide more beds for institutional treatment, and also more efficient domiciliary care; but on the administrative side there is just as urgent a problem—the reuniting of the tuberculosis services so as to restore the relationship between prevention, diagnosis, treatment, and rehabilitation that existed before the National Health Service Act.

To try to organize treatment of tuberculosis apart from prevention and rehabilitation is to admit a complete lack of appreciation of the fundamental characteristics of the disease. Tuberculosis is most deceptive and insidious in its manifestations; it has a serious influence on the industrial life of the population, and causes repercussions throughout social relationships, and yet at the same time it is one of the most individualistic of disabilities. For these reasons the treatment of a case of tuberculosis should not be, as it is at present, the responsibility of one authority, leaving another authority to deal with the important aspect of prevention and aftercare.

Reorganization of the Services

The need for a reorganization of the existing administration of our tuberculosis services is urgent, and the care of the tuberculous in the home emphasizes very clearly the necessity for an amalgamation between the local health authorities and the regional hospital boards with respect to this disease. Let it be clearly understood that domiciliary treatment has come to stay. Experience has shown that in certain circumstances domiciliary treatment can shorten, and sometimes eliminate, institutional treatment, and it is reasonable to suppose that the clinical improvement obtained in the normal environment of the home will be more permanent in character than that derived under the abnormal surroundings and routine of the sanatorium. By domiciliary treatment the great difference between sanatorium life and home life is avoided, and the patient escapes the hazard of having to acclimatize himself to home conditions.

We therefore must plan for the development of domiciliary treatment, and create the machinery whereby the regional hospital board and the local health authority can jointly deal with the tuberculosis problem in their areas. The employment of the chest physician by either body should be on the same terms, and there should be an easy exchange of information and a mutual interest in each other's activities. This can best be established by the formation of a joint tuberculosis panel, consisting of members of the board of governors of teaching hospitals, regional hospital boards, and the local health authorities. It may be that there is no authority under the Act to give such a body preceptive powers, but it could be an authority to which all debatable tuberculosis problems in the region could be referred for advice. This would go some way towards adjusting the present disjointed administration.

A more satisfactory solution is to admit that the National Health Service Act as at present administered is inadequate for dealing with tuberculosis, because it does not take into consideration the peculiarities of the disease, and to press for an Amending Act to create a tuberculosis administration that would enable a service to be developed that could reduce the mortality and morbidity of the disease to an insignificant figure. Until this is done we shall proceed in a wasteful, discontented, and disorderly manner without hope of any real progress. The necessity for this action is of increasing importance in view of the international situation. In the event of war it is essential that our defences against tuberculosis shall be strong enough to withstand the strain that such conditions place upon them.

Conclusion

I would stress that domiciliary treatment can be beneficial, but to carry it out successfully requires money, good equipment, staff, and all those facilities that enable the patient to take the necessary rest at home. The higher the standard of living and the better the morals of the family, the more successful will be the result. Pre-sanatorium

treatment differs from post-sanatorium care, but both should be of interest to the regional hospital board and the local health authority. Without the mutual co-operation of these two bodies there is little hope of the development of efficient domiciliary care and treatment. In fact, there is urgent need for a complete revision of our tuberculosis administration and the creation of a special service which the peculiar characteristics of the disease demands.

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THE CONTENT OF HAEMOPOIETIC FACTORS IN LIVER EXTRACTS

RELATIONSHIP TO CLINICAL RESPONSE

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In recent years there has been considerable discussion about the potency or otherwise of liver extracts available in this country for the treatment of the megaloblastic anaemias. This has been referred to by Mollin (1950), who has given clinical evidence of a decline in the potency of commercial liver extracts during the period from 1943 to 1948.

Since vitamin B_{12} was isolated from liver almost simultaneously in Great Britain (Lester Smith, 1948; Lester Smith and Parker, 1948) and in the United States (Rickes *et al.*, 1948), it has become clear that this substance is the main therapeutically active material present in refined liver extracts used for the treatment of pernicious anaemia, and vitamin B_{12} is therefore generally considered to be what was formerly known as the "specific anti-anaemic factor." Ungley (1949) has reported on the therapeutic activity of vitamin B_{12} in a series of 53 patients with pernicious anaemia, and Cuthbertson *et al.* (1949) and Shaw (1949a) have assayed certain liver extracts for vitamin B_{12} content and discussed the relationship of this to their clinical activity. A detailed review of the clinical and experimental uses of vitamin B_{12} and related factors has been made by Girdwood (1950).

The object of the present investigation was to estimate the vitamin B_{12} and pteroylglutamic acid (folic acid) content of various liver extracts that had been prepared commercially between the years 1945 and 1950, and to compare the vitamin B_{12} activity as assayed by microbiological methods with the clinical response on the basis of the results of Ungley (1949), who used vitamin B_{12} itself as the therapeutic agent in cases of pernicious anaemia and put forward a formula to indicate the rise in red cells that might be expected to occur with various doses. In addition, by the kind co-operation of certain manufacturers of liver extracts it was found possible to compare a few of our vitamin B_{12} estimations with the results obtained by these commercial houses. Estimation of vitamin B_{12} was carried out in all instances by measuring the turbidity produced by the growth of organisms in a vitamin-B_{12}-deficient medium to which had been added various dilutions of the liver extracts to be tested. These were compared with a standard obtained by measuring the growth sustained by adding known amounts of vitamin B_{12} to the same culture medium.

Methods

The patients were typical cases of Addisonian pernicious anaemia with histamine-fast achlorhydria and a megaloblastic bone marrow. There was no evidence of steatorrhoea or of any abnormality of dietetic habits. A control period without treatment preceded the injections of liver extract, and during this period there was no evidence of spontaneous remission. All the haematological investigations were carried out by one of two experienced research technicians whose results were in close agreement.

The liver extracts were kept in a refrigerator from the time of issue for clinical testing except where otherwise noted.

The microbiological assays for vitamin B_{12} were carried out by an unpublished modification of the method of Hoffmann *et al.* (1949), using *Lactobacillus leichmannii* as the test organism. Hoffmann and his co-workers in one of their methods added thioglycollic acid to the culture medium to prevent loss of vitamin B_{12} activity as a result of autoclaving, but we preferred to omit the thioglycollic acid and to add the samples aseptically after the medium had been autoclaved. It has been shown (Cuthbertson and Lester Smith, 1949; Shaw, 1949b; Winsten and Eigen, 1949) that liver extracts contain substances other than vitamin B_{12} capable of sustaining the growth of *L. leichmannii*. These can be separated by methods which include partition chromatography and by destroying the vitamin B_{12} by alkaline hydrolysis and then re-estimating the ability of the extract to support growth of the test organism. We tested our liver extracts by the latter method, and showed that substances other than vitamin B_{12} were responsible for only a negligible fraction of the growth-supporting activity of the samples tested, except in the case of the extract produced by Manufacturer C, 1948 (Table III), where 25% of this activity was due to substances other than vitamin B_{12}.

In each instance our vitamin B_{12} assay figure is the mean of three readings, and, as will be seen from Table I,

TABLE I.—*Results of Vitamin B_{12} Assays on 16 Liver Extracts, Using a Tube Method with L. leichmanii as Test Organism*

Extract No.	Results of Three Assays (μg./ml.)			Mean
1	7·5	7·7	7·6	7·6
2	5·4	5·5	5·4	5·4
3	4·1	5·5	4·7	4·8
4	4·4	3·4	4·9	4·2
5	4·3	4·0	3·7	4·0
6	3·95	3·3	3·75	3·7
7	2·85	2·3	2·9	2·7
8	1·9	2·0	2·3	2·1
9	2·05	2·2	2·0	2·1
10	2·0	2·2	1·8	2·0
11	1·3	1·6	1·3	1·4
12	1·3	1·2	1·25	1·25
13	0·92	0·99	0·82	0·91
14	0·47	0·45	0·45	0·46
15	0·36	0·34	0·35	0·35
16	0·24	0·27	0·24	0·25

the readings were in close agreement. The discrepancies within a group of triplicates are approximately proportional to the absolute value of the mean. The logarithms of the readings were therefore taken for statistical treatment.

The logarithmic standard error of the mean is 0.02302, and the 5% fiducial limits are ±0.04698. This implies that the standard limit of the mean is about ±5.3% of the assay result, and it can safely be taken to be within the range 90 to 111% of the true mean in 19 cases out of 20.

In addition to our own results, we were fortunate in having assays performed for us on a few extracts by three commercial firms, and the results of these tests are shown in Table II.

TABLE II.—*Comparison of Vitamin B_{12} Assay Results With Those of Three Manufacturing Firms (μg/ml.)*

Extract	Manufacturing Firm	*L. leichmannii*, Tube Method			*L. lactis* Dorner, Plate Method
		Own Assay	Firm X	Firm Y	Firm Z
1 ..	Z	3·7	3·1	3·8	5·56
2 ..	X	0·46	0·27	—	—
3 ..	X	7·6	14·4	7·2	10·2
4 ..	X	4·0	1·4	—	2·1

The pteroylglutamic acid estimations were carried out by the method of Teply and Elvehjem (1945), using *Streptococcus faecalis* as the test organism, and measuring the growth of the organisms by turbidity estimations in a Spekker photoelectric absorptiometer.

In the paper by Ungley (1949), Campbell gives a formula to express the expected red cell rise when a dosage of 5, 10, 20, 40, or 80 μg. of vitamin B_{12} is given. Campbell's formula was calculated from the actual rise of red cells over a period of 15 days in 63 cases receiving vitamin B_{12}. In our calculations we have the slight inaccuracy that in most instances the red cell count had been done on the 14th rather than the 15th day (the day of injection being calculated as Day 0). The difference in red cell level between 14th and 15th days was extremely small in the few instances where a count was done on both days.

Statistical examination reveals that Campbell's formula is not wholly satisfactory. In the first place, for reasons given in the original paper, he considered it advisable to omit all data derived from the administration of very low doses of vitamin B_{12}, and to reject a discrepant observation within the range of doses he included (a patient who showed an exceptionally large red cell rise with 5 μg. of vitamin B_{12}). In the second place, none of the three regression coefficients in the formula he actually uses is statistically significant. In fact, he gives two formulae—one linear with respect to initial erythrocyte count and log. dose, and the other containing also a product term. The simpler formula, which he rejects, actually has the higher statistical credentials. To be on the safe side we have calculated our own results in terms of both formulae. As given by Campbell, these formulae are not convenient for the calculation of the expected responses at doses other than those he used. We have therefore used algebraically equivalent forms, in which the dose is expressed in ordinary logarithms to base 10. The two formulae are:

(a) $I_{15} = 0.684 - 0.131\ E + 0.814\ P - 0.056\ PE$
(b) $I_{15} = 0.913 - 0.199\ E + 0.641\ P$

where

I_{15} = Expected increase in red blood cell count (millions per c.mm.) on the 15th day
E = Initial red blood cell count (millions per c.mm.) on day of injection
P = Logarithm of number of μg. of vitamin B_{12} injected

Ungley has pointed out that the formula used in his paper is unsatisfactory for doses of 2.5 μg. or less of vitamin B_{12}. For this reason we have divided our findings into two groups according to whether the dosage of vitamin B_{12} given was greater or less than 4 μg.

Results

The results of our assays for vitamin B_{12} and pteroylglutamic acid on 15 extracts that were tested clinically on 20 patients are given in Table III. All but one of these had been marketed as a high potency extract. In Table IV

TABLE III.—*Vitamin B_{12} and Pteroylglutamic Acid Content of Liver Extracts*

Manufacturer	Date of Manufacture	Vitamin B_{12} Content (μg./ml.)	P.G.A. Content (μg./ml.)
A	1945	5·45	0·150
B	1945	2·7	0·594
A	1946	1·25	0·062
B	1946	1·4	0·538
B	1947	2·1	0·253
B	1947	2·1	0·525
B	1947	0·9	0·272
A	1948	4·0	0·041
C	1948	0·25	0·335
A	1948*	0·46	0·378
B	1948	2·0	0·173
A	1949	7·6	0·067
D	1949	0·35	0·906
B	1950	4·8	0·494
B	1950	3·7	0·149

* Extract was not marketed as a high-potency extract.

TABLE IV.—*Vitamin B_{12} Content of Liver Extracts and B_{12} Preparations Purchased Commercially in 1950*

Preparation	Country of Origin	Manufacturer's Statement of Vitamin B_{12} Content or Potency	Content According to Our Assay
Vitamin B_{12} ..	U.K.	20 μg./ml.	16·5 μg./ml.
,, ,, ..	U.K.	10 μg./ml.	10·0 μg./ml.
Liver extract ..	U.K.	20 μg./ml.	3·75 μg./ml.
,, ,, ..	U.S.A.	15 U.S.P. units	1·5 μg./ml.

are given the results for four preparations of stated potency purchased in 1950. The American extract was provided by a patient who visited the United States.

In Tables V and VI are given the actual red cell rises when these extracts were used clinically, the expected cell rises according to each of the above formulae, and the differences between the observed and the calculated rises. Table V refers to the 12 cases receiving 4 μg. or more of vitamin B_{12}, and Table VI to the eight patients who had less than this amount. It will be seen that the expected values on the two formulae are closely similar. Table VII summarizes the results of the comparison of observed and expected values. In the 12 cases in the first group the mean red blood cell rise was 1,068,000. The mean discrepancy on each of the two formulae was very small. The spread of values about the mean, conveniently measured by the standard deviation, was 0.508. Use of either formula reduces the standard deviation to about 0.45. This means that the formula is of some value for prediction but the reduction of standard deviation in these few cases is not statistically significant. On the other hand, in the second (low-dose) group, to which Campbell's formula is not supposed to apply, the predictive value of the formula is considerable and statistically significant.

We therefore combined the two groups, and the predictive value of the formulae on all the cases is shown at the bottom of Table VII. The standard deviation is reduced by about 22%, although, at 0.47, it is still

TABLE V.—*Red Cell Response to Injections of Liver Extract of Known Vitamin B_{12} Content (Dose More Than 4 μg.)*

Case No.	Sex	Age	Initial Red Cell Level (mills./c.mm.)	Vitamin B_{12} Given in Liver Extract (μg.)	Retic. Peak and Day	Actual Red Cell Rise (mills./c.mm.) and Day	Formula (a)		Formula (b)		Volume of Dose (ml.)
							Expected Red Cell Rise (mills./c.mm.) at 15 Days	Difference (Actual—Expected)	Expected Red Cell Rise (mills./c.mm.)	Difference (Actual—Expected)	
1	F	46	1·48	15·2	19·4 (5)	0·92 (14)	1·35	−0·43	1·38	−0·46	2
2	F	50	2·08	10·9	22·4 (5)	1·86 (15)	1·13	+0·73	1·16	+0·70	2
3	M	68	1·44	10·9	23·4 (4)	1·41 (14)	1·26	+0·15	1·29	+0·12	2
4	F	67	2·32	10·9	20·6 (5)	0·90 (15)	1·09	−0·19	1·12	−0·22	2
5	F	49	1·61	8·0	22·4 (5)	1·10 (14)	1·13	−0·03	1·17	−0·07	2
6	F	66	1·65	8·0	3·4 (6)	1·50 (14)	1·12	+0·38	1·16	+0·34	2
7	M	67	1·89	7·4	5·2 (6)	0·37 (15)	1·05	−0·68	1·09	−0·72	2
8	M	73	1·35	5·4	9·8 (6)	0·73 (14)	1·05	−0·32	1·11	−0·38	2
9	F	40	0·95	4·2	22·0 (6)	1·71 (15)	1·03	+0·68	1·12	+0·59	2
10	F	52	1·51	4·2	6·2 (6)	0·30 (15)	0·94	−0·64	1·01	−0·71	2
11	F	75	1·30	4·2	18·0 (5)	1·07 (14)	0·98	+0·09	1·05	+0·02	2
12	M	73	2·20	4·0	8·4 (6)	0·94 (15)	0·81	+0·13	0·86	+0·08	2

TABLE VI.—*Red Cell Response to Injections of Liver Extract of Known Vitamin B_{12} Content (Dose Less Than 4 μg.)*

Case No.	Sex	Age	Initial Red Cell Level (mills./c.mm.)	Vitamin B_{12} Given in Liver Extract (μg.)	Retic. Peak and Day	Actual Red Cell Rise (mills./c.mm.) and Day	Formula (a)		Formula (b)		Volume of Dose (ml.)
							Expected Red Cell Rise (mills./c.mm.) at 15 Days	Difference (Actual—Expected)	Expected Red Cell Rise (mills./c.mm.)	Difference (Actual—Expected)	
13	F	34	1·21	2·8	17·4 (5)	1·51 (14)	0·86	+0·65	0·96	+0·55	2
14	F	63	1·33	2·5	22·4 (4)	1·81 (15)	0·80	+1·01	0·90	+0·91	2
15	F	59	1·97	1·8	10·4 (5)	0·91 (14)	0·61	+0·30	0·68	+0·23	4
16	F	55	2·48	1·8	4·0 (7)	0·14 (15)	0·53	−0·39	0·58	−0·44	4
17	F	42	1·61	1·8	9·0 (5)	0·40 (15)	0·66	−0·26	0·76	−0·36	2
18	F	67	1·73	1·4	12·0 (6)	1·10 (14)	0·56	+0·54	0·66	+0·44	4
19	F	59	2·35	0·5	1·2 (5)	−0·06 (14)	0·17	−0·23	0·25	−0·31	2
20	F	62	1·74	0·5	1·9 (4)	−0·16 (14)	0·24	−0·40	0·37	−0·53	2

TABLE VII.—*Comparison of Observed and Expected Values for Red Cell Rise*

	Observed Red Cell Rise	Observed Minus Expected Red Cell Rise	
		Using Formula (a)	Using Formula (b)
Dosage of vitamin B_{12} 4 μg. or more (12 cases):			
Mean (mills./c.mm.)	1·068	−0·011	−0·059
Standard deviation ..	0·508	0·466	0·448
Dosage of vitamin B_{12} less than 4 μg. (8 cases):			
Mean (mills./c.mm.)	0·706	+0·153	+0·061
Standard deviation ..	0·738	0·531	0·510
Both groups (20 cases):			
Mean (mills./c.mm.)	0·923	+0·055	−0·011
Standard deviation ..	0·609	0·482	0·473

considerably higher than the value of 0.33 claimed by Ungley and Campbell. Formula (b) seems slightly better than formula (a).

It seemed worth while to obtain from our data the best-fitting formula, for comparison with that put forward by Ungley. The analogue of his formula (b) worked out as :

$$I_{15} = 1.474 - 0.542\ E + 0.665\ P.$$

It is remarkably similar to that of Ungley, differing mainly in the increased importance given to the influence of the patients' initial counts on the final result. We believe that, by omitting his cases receiving a low dosage of vitamin B_{12}, Ungley artificially minimized the importance of this factor.

It is important to stress that, as is suggested by Table II, different results might have been obtained and different conclusions reached had the vitamin B_{12} assays been carried out by other workers using various modifications of the assay methods.

As has been found by previous workers (Stokstad and Jukes, 1946), the pteroylglutamic acid content of the extracts was in all instances therapeutically negligible.

In order to see how small a dose of vitamin B_{12} might be effective, we gave one patient, suffering from classical Addisonian pernicious anaemia, a single injection of 0.4 μg. of vitamin B_{12} itself after a control period. It will be seen from the Graph that we seem to have selected by chance a patient who was able to show some response even to this small dosage, for the red cell count rose by 670,000 per c.mm. in 13 days, and there was a partial

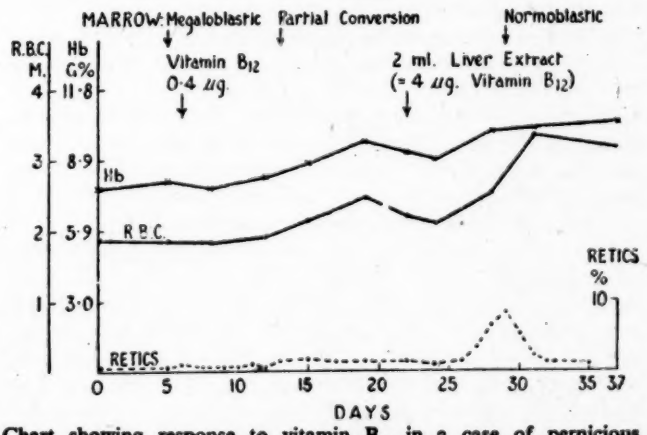

Chart showing response to vitamin B_{12} in a case of pernicious anaemia (man aged 73).

conversion of the bone marrow towards the normoblastic state, as evidenced by condensation of the nuclei of the megaloblasts.

Discussion

The results of this investigation indicate that the vitamin B_{12} content of all 15 batches of liver extracts manufactured between the years 1945 and 1950 and tested both microbiologically and clinically was low or very low. For comparison we have the figure of 25 μg./ml. for an American liver extract given by Mollin (1950). On the other hand, we have not included in the series a British liver extract, marketed in 1948 but not tested clinically by us, which we found to have a vitamin B_{12} content of 14 μg./ml. It is of interest that we obtained similar results

on assaying two samples of the same batch of one extract manufactured two years previously, one ampoule of which had been kept in a refrigerator and the other sent back to us from the Fiji Islands.

It has been suggested by Rickes *et al.* (1948) and by many workers since then that 1 U.S.P. unit of activity is approximately equal to 1 μg. of vitamin B_{12}, and the aim of manufacturers has been to market high-potency extracts containing 15 U.S.P. units of activity. How far the extracts considered in the present paper fall short of this target is evident. It should be realized that it was not the fault of British manufacturers that the vitamin B_{12} content of their products was low at a time when clinical testing was the only method of assay available to them, and individual variation to the same dose was so great that it would no doubt be possible to show the presence of "15 U.S.P. units of activity" in many of the above extracts if those testing them persevered long enough to find a sufficiently sensitive patient. Nor should it be thought that all American extracts are superior to British ones. Personal experience by one of us of the clinical results obtained in the United States by various liver extracts has convinced us that low-potency extracts were not uncommon across the Atlantic, too, when microbiological assay methods were not available, and from Table IV we see that a "high-potency" extract marketed in 1950 by a reputable American firm contained only 1.5 μg./ml.

The relationship between the actual red cell rise and the expected rise when liver extracts are used clinically, and calculating from Ungley's results with vitamin B_{12} itself, is obviously of importance. One should not, however, attach too much importance to formulae, especially those based on the relatively meagre data here considered, even if Ungley's findings and those of the present series are considered together. The random errors are so high, and the other relevant factors not taken into account are probably so important, that the formulae can do little more than indicate a qualitative relationship. All one can say with confidence at the moment is that the data indicate that the red blood cell rise is greater the lower the initial state of the patient and increases with increase of dose, and give some idea of the order of magnitude of the influence of these factors. We must add, however, that a statistical analysis of all available data may give one a fair idea of the quantitative importance of these influences. A study of this nature is planned.

In view of this, our conclusions must be guarded, but it is true to say that we have produced no evidence to support the view that the results in these cases cannot be explained on the assumption that the haemopoietic responses are due to the vitamin B_{12} content of the extracts. In order to suggest that the activity of a liver extract was not due solely to its vitamin B_{12} content it would be necessary to show a consistent and definite difference in response to the injection of that particular extract given to a relatively large number of patients. When the actual response is much greater than the expected response the chief possibilities are: (*a*) that this is a case that, by reason of some individual variation as yet not understood, responds unusually well to the dosage given; (*b*) that a spontaneous remission has coincided with the test; (*c*) that there is some substance present in the liver extract that has a haemopoietic effect and is not a growth factor for *L. leichmannii* or any other test organism used; (*d*) that the liver extract contains, in addition to vitamin B_{12}, inhibitors for the growth of *L. leichmannii*; or (*e*) that some of the vitamin B_{12} is present in a conjugate form that does not support the growth of *L. leichmannii*.

The significance of these factors is not yet understood. An artificially produced hydrogenation product of vitamin B_{12} has been named vitamin B_{12a} (Kaczka *et al.*, 1949), and it is possibly the same as vitamin B_{12b} isolated in crystalline form by Pierce *et al.* (1949) (Brockman *et al.*, 1950). More recently, vitamin B_{12c} has been isolated (Buchanan *et al.*, 1950), but so far there is no published evidence of the presence in liver of forms active clinically and not microbiologically, although reference to the possible existence of such forms has been made by Lester Smith (1950).

The problem of whether liver extract is active haemopoietically only by virtue of its vitamin B_{12} content may also be approached by comparison of the results of maintenance therapy. Recently Meacham *et al.* (1950) have reported that a vitamin B_{12} concentrate in a dosage equivalent to 1 μg. daily, but given every three or four weeks, did not maintain optimal blood levels in pernicious anaemia patients. They attribute this to inadequate dosage of vitamin B_{12}, but further work of this nature is indicated and other possible explanations require investigation, including the possibility that vitamin B_{12} is absorbed and excreted less rapidly if injected in the form of a liver extract.

It is of some interest to know how many patients would be required to assay a liver extract or vitamin B_{12} preparation clinically to any desired degree of precision. An answer to this question may emerge from our further statistical study. On the basis of the formulae used in this paper, for what they are worth, one can make the following rough estimates. If the true potency of a preparation be put at 100, then, using 4 patients, one would expect, in 19 times out of 20, to get a result only within the range 30 to 330; 16 patients would give an accuracy, in 95% of cases, between about 60 and 160; 64 patients between 80 and 125; while to get within 10% of the true result 250 or more subjects would be required. The same order of magnitude of error emerges from the results of the present series using liver extracts and from those of Ungley (1949) using vitamin B_{12}.

When microbiological assay is carried out, however, it is important that the method should be standardized, since, as we have seen in Tables II and IV, quite marked discrepancies may occur. At present the best practicable method of testing liver extracts for haemopoietic activity would appear to be by the combination of clinical tests on a few patients and microbiological assay by an agreed standard technique

Summary

The vitamin B_{12} content of 15 batches of British liver extracts prepared for commercial use between 1945 and 1950 and tested microbiologically by a tube method using *L. leichmannii* as the test organism was low, varying from 0.25 μg./ml. to 7.6 μg./ml. The pteroylglutamic acid content was negligible.

The actual rise of red cells in 20 pernicious anaemia patients treated with these liver extracts was compared with the calculated response according to the vitamin B_{12} content. Too much importance should not be attached to formulae, especially in view of the relatively meagre data available, but the results give no evidence to suggest that the haemopoietic responses cannot be attributed to the vitamin B_{12} content of the liver extracts.

Clinical testing alone of liver extracts or vitamin B_{12} concentrates may give very inaccurate information, but, although it is possible to obtain consistent results with a single microbiological method of vitamin B_{12} assay, there may be considerable variation between the results obtained by workers using different microbiological methods. Hence it is important that a standard method be agreed upon.

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THE MANUBRIO-STERNAL JOINT IN RHEUMATOID ARTHRITIS

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[WITH SPECIAL PLATE]

Examination of the manubrio-sternal joint in a series of patients has shown that rheumatoid involvement of this joint is not uncommon. Five examples are outlined here to indicate the clinical and radiological features.

Case Reports

Case 1.—A married woman aged 55 gave a five-year history of rheumatoid arthritis, still active, and showing typical clinical and radiological involvement of feet, wrists, fingers, and right elbow. The manubrio-sternal joint became painful two years after the onset of the disease, and the patient noticed that there was swelling and tenderness over the joint. The pain came in bouts lasting two to three days; between the bouts there was a residual ache. During the bouts the pain was aggravated by coughing and sneezing, and inhibited deep respiratory movement. Examination of the joint confirmed the presence of soft-tissue swelling and tenderness (Fig. A). Radiographs showed irregular destruction of the articular margins of the joint (Plate, Fig. 1). The sedimentation rate was 31 mm. (Wintrobe corrected) at the end of one hour.

Case 2.—A married woman aged 52, who gave a twenty-two year history of rheumatoid arthritis, starting with pain, swelling, and tenderness over the manubrio-sternal joint, showed clinical and radiological evidence of active disease in almost all the peripheral joints. The manubrio-sternal pain had lasted for one month only, and had not recurred. Examination showed no clinical abnormality of the joint, but a radiograph revealed gross narrowing and irregularity of the joint space, with marked irregular expansion of the articulating ends of the bones (Fig. 2). The sedimentation rate was 30 mm. (Wintrobe corrected) at the end of one hour.

FIG. A.—Swelling over the manubrio-sternal joint (Case 1).

Case 3.—A girl aged 16 gave a one-year history of swelling, aching, and stiffness of the proximal interphalangeal joints of the right index and middle fingers and of the left index finger. Examination of these joints showed soft-tissue swelling and tenderness, with tenderness of some of the other proximal interphalangeal, metacarpo-phalangeal, and wrist joints. Radiographs of these showed only soft-tissue changes. For three weeks prior to attending the clinic she had experienced a constant tight sensation over the front of the chest, in the region of the manubrio-sternal joint, aggravated by deep inspiration and yawning. She had no cough or other chest symptoms. There was definite tenderness over the manubrio-sternal joint, which persisted for one month. A radiograph of the manubrio-sternal joint showed no abnormality.

Case 4.—A married woman aged 52 gave a nine-year history of rheumatoid arthritis affecting all the peripheral joints and the cervical spine. She was severely crippled. For the past two years she had had intermittent pain in the region of the manubrio-sternal joint aggravated by deep breathing, coughing, and yawning. Examination showed swelling and tenderness of the manubrio-sternal joint. Radiographs showed irregularity of the joint space, erosion of the joint margins, and irregular expansion of the articulating ends of the bones (Fig. 3).

Case 5.—A married woman aged 53 gave a twelve-year history of rheumatoid arthritis with involvement of the knees, shoulders, elbows, wrists, fingers, and ankles, with typical radiological changes. Pain in the region of the manubrio-sternal joint was first noticed six months before attending the clinic, and became her chief symptom. The pain occurred in attacks lasting up to twenty-four hours, and was aggravated by yawning and coughing. A striking feature of the pain was its tendency to occur on exertion, especially on walking uphill, after which it often lasted several hours. When severe, she found difficulty in taking a deep breath. This pain, which had the same quality as her arthritic pains elsewhere, was relieved by aspirin. There was marked tenderness over the manubrio-sternal joint. A radiograph of the joint showed no abnormality. Examination of the cardiovascular system, cardioscopy, and the electrocardiogram were normal. Blood Wassermann and Kahn reactions were negative. The sedimentation rate was 31 mm. (Wintrobe corrected) at the end of one hour.

Anatomy

The manubrio-sternal joint is of the cartilaginous type, the articular surfaces being covered by a layer of hyaline cartilage and connected by a disk of fibro-cartilage. A limited amount of movement is permitted, and occurs with each thoracic respiratory movement. It is stated that in rather more than 30% of people conversion into a synovial

joint takes place by absorption of the central part of the disk (Johnston and Whillis, 1949). The incidence of ossification of the disk was found to average 10% and was commoner in women than in men. There was no correlation between incidence of ossification and age (Trotter, 1934).

Discussion

The above cases are examples of the effect of rheumatoid arthritis on the manubrio-sternal joint. In the early stages there is pain, swelling, and tenderness at the joint site, and in more advanced cases radiological changes. It may be the first manifestation of rheumatoid arthritis (Case 2). The pain may be constant or may show periodicity. In all the above cases it was aggravated by respiratory movements, and in particular by coughing, sneezing, yawning, and deep inspiration, and hence may occur on exertion. It may be severe enough to inhibit full inspiration. The pain has to be distinguished from other causes of chest pain. In Case 5 its precipitation by exertion simulated angina of effort.

Soft-tissue swelling was prominent in two cases. Tenderness over the joint was present in all the cases; as an isolated finding, however, it was not considered sufficient to justify the diagnosis, because this area may be sensitive in normal people, particularly those with a prominent sternal angle.

Radiological changes present in three cases included soft-tissue swelling, irregularity and narrowing of the joint space, erosion of the articular surfaces, and irregular expansion of the articulating ends of the manubrium and sternum. Progression to bony ankylosis was not observed in any of the cases. When bony ankylosis occurs in normal people the radiographs show that the continuity of the bony surfaces is quite smooth (Fig. 4). The joint was best visualized in coned lateral views; routine lateral chest films were usually not satisfactory. The joint picture may be obscured by superimposition of calcification in the second costal cartilage or in the presence of a depressed sternum.

Rheumatoid arthritis commonly affects synovial joints, especially those at the periphery, where considerable mobility is a feature. In contrast, the manubrio-sternal joint is usually cartilaginous and the site of very limited movement.

Involvement of the manubrio-sternal joint is well recognized in ankylosing spondylitis, and was noted in 7 out of 65 cases (Hart, Bogdanovitch, and Nichol, 1950). Osteoarthritis of this joint has been described (Rolleston, 1892–3). There is reference to two cases of osteochondritis (Brailsford, 1934).

Summary

Rheumatoid arthritis of the manubrio-sternal joint is described, with particular reference to five illustrative cases.

The pain may be the first symptom of rheumatoid arthritis. It is mainly related to respiratory movements, and has to be differentiated from other causes of chest pain.

The radiological changes, when present, are best seen in coned lateral views of the joint. The chief features are irregular narrowing of the joint space, with irregular expansion of the articulating bone ends.

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ERYTHEMA NODOSUM AS INITIAL MANIFESTATION OF BOECK'S SARCOIDOSIS

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[WITH SPECIAL PLATE]

In chest clinics there is increasing awareness of growing appreciation among the profession of the fact that erythema nodosum is often a manifestation of tuberculous infection, and the formerly widely held opinion that this disorder is of rheumatic origin is fast disappearing. It is less widely recognized that the determination of the cause often provides an intriguing exercise in diagnosis for the chest physician who is aware of the multiplicity of disorders with which erythema nodosum has associations, and which tend to be discussed in the more specialized journals to the loss of those whose reading is confined to the more widely circulating publications.

Consideration is primarily given to investigations of tuberculosis as the cause, for it is now commonly considered that the eruption occurs during primary infection at the time when the patient first develops hypersensitivity to tuberculin. In Scandinavia, Wallgren (1938) has shown that 95% of his series of 800 cases gave positive tuberculin skin reactions, though that high percentage is not generally found in this country, where 54% of the cases of Bruce Perry (1944) were tuberculin-positive. In Scandinavia, where primary infection occurs at a later average age than here, 30% of primary infections were associated with the eruption; but in Ireland, where the age of onset of primary infection is earlier, Dunlevy (1949) has shown an incidence of only 2.8%.

Causes other than tuberculosis appear, therefore, to be more frequent in this country than in many others. Collis (1932) revealed that some tuberculin-negative patients showed pronounced skin sensitivity to streptococcal nucleoprotein, and Rotnes (1936) recorded a case in which the eruption appeared on 14 occasions, mostly after attacks of tonsillitis.

Sulphonamide sensitivity is not infrequently a cause, and it may be difficult to decide whether a patient with streptococcal tonsillitis under treatment with sulphonamides has developed erythema nodosum as a result of the streptococcal infection or of the treatment. Similarly, in patients with pyrexia of unknown cause under treatment with sulphonamides, the eruption cannot be attributed to the drug without the exclusion of tuberculosis and other conditions. During the recent war it was commonly recognized that meningococcal septicaemia was a far from infrequent cause.

In California, infection with *Coccidioides immitis* has resulted in a considerable number of cases, but none seem to have been recognized in this country, and

other infrequent causes here and elsewhere are syphilis, gonococcal septicaemia, lymphogranuloma inguinale, leprosy, lymphadenoma, and iodides, bromides, and other drugs. It is difficult as yet to determine the importance of Boeck's sarcoidosis as a factor in the aetiology of the disorder, but, in this country, Kerley (1942, 1943) and, in Scandinavia, Löfgren (1946) and Bjerkelund (1947) have described cases in which sarcoidosis was considered to be responsible.

Below is given the history of three cases in which there are thought to be grounds for arriving at the diagnosis of sarcoidosis.

Case 1

A married woman aged 30 had an attack of erythema nodosum in June, 1949. There had been no preceding illness of any kind. Her chest was *x*-rayed at a general hospital when the erythema had subsided and again in mid-August, both films showing gross bilateral hilar glandular enlargement and a small shadow in the left subclavicular area. She had no cough and was breast-feeding her few-months-old baby, and, apart from some lassitude, had no symptoms.

In view of the radiological appearances she was referred to the chest clinic late in August. Her weight was 10 st. 7 lb. (66.7 kg.); there was no evidence of glandular or splenic enlargement, no history of uveitis or parotid swelling, and no skin eruption; the E.S.R. (Cutler) was 12 mm. in one hour, and the differential white cell count showed 48% neutrophils, 5% eosinophils, 1% monocytes, and 46% lymphocytes. Examination of the chest revealed a slightly impaired percussion note in the hilar region on both sides posteriorly and a marked signe d'Espine. The *x*-ray film (Plate, Fig. 1) showed gross bilateral lobulated hilar glandular enlargement, an irregular faint shadow in the first left interspace, and hard streaky shadowing in the right upper zone. A Mantoux test performed with 1 in 1,000 O.T. was negative.

On October 11 she weighed 10 st. 4 lb. (65.3 kg.) and felt well; her E.S.R. (Cutler) was 7 mm. in one hour, and Mantoux 1 in 1,000 was again negative. There was now a small cluster of papules on the left side of the forehead and one small gland palpable above the head of the right clavicle. A laryngeal swab contained no tubercle bacilli on culture. An *x*-ray film showed some diminution in the size of the glandular enlargement, but the striations were increased in the right lung and were now also evident on the left. A film of both hands revealed no abnormality in the bones.

On November 25 she felt as well as she had done for years, and weighed 10 st. 5 lb. (65.8 kg.); the papules and gland were unchanged; Mantoux 1 in 100 was negative; W.R., Kahn, and G.C.F.T. tests were negative; and serum proteins totalled 7.55 g. %. Rather copious fine rales were audible at the right base, but she denied having any cough. An *x*-ray film showed further diminution in size of the hilar glandular enlargement, but the left subclavicular shadow and the striations in both lungs were unchanged and a few pinhead faint shadows were evident in the right upper zone.

Case 2

A married woman aged 28 had an attack of erythema nodosum in July, 1949, and two weeks previously had had a slight sore throat but had not received any treatment. After four weeks in bed she was referred to the chest clinic on August 30. She then felt perfectly well and weighed 14 st. 1 lb. (89.4 kg.).

General examination and questioning showed no evidence of splenic or glandular enlargement, skin eruption, or history of eye trouble or parotid swelling. No abnormal signs were found on examination of the chest, but *x*-ray films (Fig. 2) of the lungs showed considerable bilateral lobulated glandular enlargement and faint irregular striations in both lower zones. A Mantoux test with 1 in 1,000 O.T. was negative.

The patient was asked to attend for further investigation a few days later, but went for a holiday to another county and was not seen until November 1. She was then feeling perfectly well and weighed 14 st. 3 lb. (90.3 kg.), but whilst on holiday in early September she had a recurrence of erythema nodosum. Her E.S.R. (Cutler) was 10 mm. in one hour; the differential count was 66% neutrophils, 3% eosinophils, 4% monocytes, and 27% lymphocytes; the W.R., Kahn, and G.C.F.T. tests were negative; a laryngeal swab showed no tubercle bacilli on culture; radiographs of the hands revealed no abnormality; and chest films showed no alteration in the picture. Mantoux 1 in 1,000 was again negative, but on November 8 a Mantoux test with 1 in 100 O.T. produced a positive reaction of 1½ in. (3.75 cm.) diameter.

On November 29 she weighed 14 st. 1 lb., and felt perfectly well; the serum proteins amounted to 7.9%, and the E.S.R. (Wintrobe) was 12 mm. in one hour. Radiologically the bilateral hilar enlargement was much less, but a few fine faint floccular shadows were scattered in both lungs, especially in the right mid-zone.

Case 3

A youth aged 18 was seen on June 3, 1949, two weeks after the onset of erythema nodosum. There had been no preceding illness other than a slight cold in the head a week before the eruption appeared. He still had a slight cough and some nasal catarrh. His weight was 10 st. 4 lb. (65.3 kg.). No abnormal signs were found in his lungs, but an *x*-ray film (Fig. 3) showed marked enlargement of the left and slight enlargement of the right hilar shadow. A Mantoux test with 1 in 1,000 O.T. was negative.

He was persuaded to attend for further investigation on October 21. He had felt perfectly well and had been at work from the week after his previous visit. His weight was still 10 st. 4 lb. There was no enlargement of spleen or of glands other than a few in both axillae, but these were apparently secondary to many cuts and abrasions on the hands, sustained at work. There had been no previous trouble with his eyes and no history of parotid swelling. His E.S.R. (Cutler) was 3 mm. in one hour; the Mantoux test, 1 in 1,000, was again negative; the white cell count was 8,800 per c.mm., and the differential count 67% neutrophils, 2% eosinophils, 1% basophils, 2% metamyelocytes, 2% monocytes, and 26% lymphocytes. Serum proteins were 7.55 g. %; the W.R., Kahn, and G.C.F.T. tests were negative; a laryngeal swab showed no tubercle bacilli on culture and there were no abnormal signs in the lungs. *X*-ray films of the hands showed no abnormality, and lung radiographs revealed considerable diminution in size of the left hilar shadow.

When seen again on December 2 he remained well, and weighed 10 st. 7 lb. (66.7 kg.), Mantoux 1 in 100 was negative, and a film of the lungs showed an almost normal hilar shadow on the right but a moderately increased shadow on the left. At no time was there any evidence of infiltration in the lungs.

Discussion

The tuberculin sensitivity was not recorded in the cases described by Kerley (1942, 1943), who based his diagnosis on the radiological appearances of massive glandular enlargement in the lungs, with or without lung infection. In his earlier series of 12 cases, all adults, eight showed benign infiltration of the lungs, and the hilar glandular enlargement in 10 was bilateral and in two on the left only. He states that in lymphadenoma it is exceptional to see the bronchial glands involved in the early stages, that bilateral lymphatic obstruction has not been described in this disease, and that the large lobulated bronchial glands have not been described in lymphosarcoma or the leukaemias.

In the studies of 185 patients over 15 years of age with erythema nodosum, Löfgren (1946) considers that in adults a non-tuberculous cause is more common than in children. Two of his sarcoidosis cases were diagnosed with the supporting evidence of biopsy, and in one of

these there was a positive tuberculin reaction to 1 in 100 O.T. He found that on testing with increasing strengths of tuberculin the skin sensitivity of erythema nodosum patients increases rapidly after the initial threshold had been passed. This may account for the marked reaction to 1 in 100 O.T. in Case 2. This effect does not appear to be due to sensitization produced by the serial testing, as others using stronger test dilutions in much greater number have not produced Mantoux conversion by this means. Löfgren classed all his six cases with bilateral hilar glandular swellings with miliary infiltrations as sarcoidosis, and a further nine with bilateral glandular enlargement and negative reactions or reaction to 1 in 1,000 or 1 in 100 O.T. as probable sarcoids. Most estimates of the incidence of negative reactors to tuberculin in sarcoidosis give figures of 60–70%, the remaining positives tending to be weak reactors. In the case described by Bjerkelund there were a negative reaction to 1 in 100 tuberculin, bilateral hilar glandular enlargement, and only two small pea-sized infiltrations near the hilum.

In sarcoidosis one-quarter to one-half of the cases show an eosinophilia, rarely over 10–15%, and the findings in Case 1 may be significant. In the active phase an increase in serum proteins is often noted and may exceed 9 g. %, the result in Case 3 being possibly a little further supporting evidence.

Whilst it may be regretted that histological proof of the diagnosis could not be obtained, it was not considered justifiable to ask the patients to submit to the inconvenience of the necessary investigations, but on the above criteria the three cases could be regarded as sarcoidosis.

Summary

The many different causes to be considered in the differential diagnosis of erythema nodosum are discussed and three cases are described in which the cause appears to be sarcoidosis.

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A new approach to Shakespeare's plays is being made in the United States. In an experimental course sponsored by the Institute of Arts and Sciences at Columbia University in New York modern psychiatric techniques are applied in studying the characters in nine Shakespearian plays: *Othello, Hamlet, Macbeth, Romeo and Juliet, A Midsummer Night's Dream, Antony and Cleopatra, Julius Caesar, King Lear,* and *The Tempest.* The aim of the course, according to Dr. Russell Potter, director of the institute, is to utilize applied science to gain a "more sympathetic comprehension" of some of Shakespeare's great character studies. Five psychiatrists, all of them Shakespearean scholars, will co-operate with Dr. Maurice Valency, professor of English at Columbia, in conducting the course. Dr. Daniel E. Schneider, one of the psychiatrists, emphasizes that the course does not seek to psycho-analyse any particular character in the play. "Rather," he says, "we will try to judge the relationship of one character to another to achieve an understanding of the entire outline of the play." It is his opinion that much of modern psycho-analysis derives some of its roots from the great poets and dramatists of the past. "Shakespeare was the greatest analyst of them all," he believes.

CARDIOLOGICAL CASE FINDING BY MEANS OF MASS MINIATURE RADIOGRAPHY

BY

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The main object of mass miniature radiography surveys is to identify patients with minimal asymptomatic pulmonary tuberculosis. In carrying out such a survey many non-tuberculous lesions are met with, and these include a fair number of cardiac examples. The following is a description of the methods used in such a survey, and a discussion of the results obtained.

Method

Survey 1 was carried out in an industrial town in the North of England, and Survey 2 in a hospital for mental defectives closely adjoining this town. In the former the material consisted of 11,929 subjects, of whom 3,931 were females and 7,998 were males, with ages varying between 14 and 75 years. The great bulk of the group consisted of 10,306 industrial workers in factories. In the same group there were 1,255 school-children, all 14–15 years old; they were particularly chosen for *x*-ray examination as they were at the age when their school careers terminated. The remaining small group of 368 subjects consisted of those other than factory workers who volunteered for mass miniature radiography. In the mental hospital group of 244 subjects all were women, their ages ranging from 18 to 66 years.

The apparatus used was the standard type as supplied by the Ministry of Health for mass radiography surveys. This has a camera attachment so that the *x*-ray picture is photographed on to a 35-mm. film; after development the miniatures are projected through a Pullin projector on to a specially prepared white screen, the distance of the projector from the screen being so arranged that an enlargement of the miniature to 6½ in. (16.7 cm.) square can be satisfactorily carried out. If the enlargement is increased to greater than these dimensions there is a larger area for the eyes to cover and the strain of reading numerous miniature films is thereby increased.

Any patients who showed evidence of cardiac abnormalities were recalled for a routine history and physical examination, followed by screening and a barium swallow if thought necessary. At the same time large films were taken in the standard postero-anterior and oblique positions.

In making the diagnosis of cardiac abnormality by means of a miniature film, the following criteria were adopted: enlargement of the cardiac shadow; undue prominence of the pulmonary artery; changes in the contour of the aortic arch and cardiac shadow; changes in the lung fields. There are certain difficulties in using miniature films which are not found in large films, quite apart from the reduced size of the negatives. In the taking of miniatures the *x*-ray tube is situated 36 in. (91.4 cm.) from the fluorescent screen, so that there is bound to be some distortion of the cardiac shadow, which will appear larger than normal. Adiposity also causes broadening of the cardiac shadow, by consequent elevation of the diaphragm. I have found that all subjects with a maximum postero-anterior diameter of the chest of over 10½ in. (26.7 cm.) have a diaphragm that is higher than one would normally expect, so that the heart

outline is broadened. A considerable number of such persons were recalled for clinical examination, but were found to be perfectly normal.

An abnormally prominent pulmonary artery was of considerable value as a signpost to cardiac pathology. It was of less importance in young adults, in many of whom a prominent pulmonary artery was a normal feature of their cardiac outline (Parkinson, 1949). Many young adults showing this feature were recalled for clinical examination without any evidence of abnormality being found clinically, and on screening the heart was normal except for a slight to moderate prominence of the pulmonary artery. A very similar picture was produced if the patient was slightly rotated, or if a moderate degree of thoracic scoliosis was present; both of these abnormalities are usually evident on inspection of the miniature, and do not give rise to undue difficulty in diagnosis. Unfolding of the aorta secondary to arteriosclerosis with or without hypertension was particularly difficult to estimate. Considerable variation in the shape of the aortic arch can be brought about by moderate elevation of the diaphragm; thus the same factors are important here as in apparent broadening of the cardiac shadow.

With these many difficulties it is not surprising that a considerable number of those recalled for clinical examination and screening show no evidence of cardiac abnormality. Vascular shadows are much more obvious on the miniature films than they are on large films: evidence of pulmonary congestion if present is usually clearly seen. An additional feature in miniature radiography which tends to obscure the picture is the effect of secondary radiation; it is especially troublesome in obese people, and tends to cast a blur over the cardiac shadow and the pulmonary vascular shadows.

Results

In the two surveys 33 cases of rheumatic heart disease were discovered (see Table). There were 22 cases in Survey 1 (Chart 1) and 11 cases in Survey 2. Although

Cases of Rheumatic Heart Disease in Surveys 1 and 2

Type of Lesion	Sex	Average Age (Years)	No. of Cases
Mitral stenosis	Male	30·75	8
	Female	37·28	7
Mitral stenosis with aortic incompetence	Male	34·0	3
	Female	34·5	2
Mitral stenosis with aortic stenosis	Male	30·0	1
	Female	—	0
Aortic incompetence	Male	50·0	2
	Female	27·3	3
Mitral incompetence with aortic incompetence	Male	—	0
	Female	14·0	1
Aortic stenosis	Male	50·0	1
	Female	—	0
Mitral incompetence	Male	—	0
	Female	38·0	4
Mitral incompetence with aortic stenosis	Male	—	0
	Female	47·0	1
Total	—	—	33

in Survey 1 all the 22 cases were identified through the use of mass miniature radiography, 17 of them had already been diagnosed by other means prior to the survey. In Survey 2 only two cases were diagnosed radiologically, though all 11 cases had been previously diagnosed on clinical grounds. There were 14 instances of hypertensive heart disease discovered in Survey 1, none of which had been diagnosed before the mass miniature radiography survey (see Chart 1). The group consisted of nine males with ages ranging from 33 to 61 years, and five females, the youngest of whom was aged 45 and the oldest 51. Those subjects who had a systolic blood pressure at the high level of normal had a diastolic pressure above normal. There were also subjects who had a diastolic pressure situated at a high level of normal but whose systolic pressure was well above normal (Chart 2). The latter group showed a considerable degree of arteriosclerosis, so that an abnormally rigid aorta may well have been the causal factor in a marked raising of the systolic blood pressure.

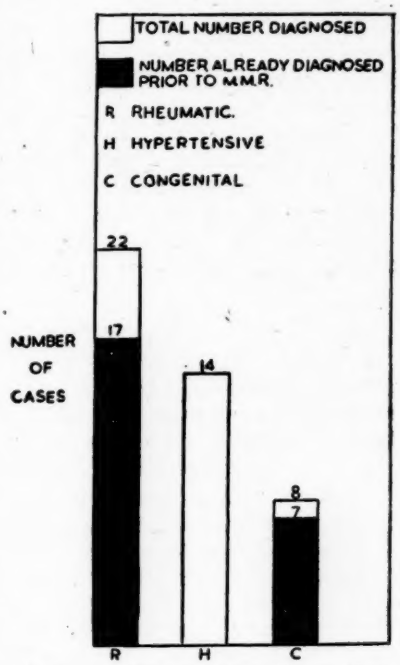

CHART 1.—Cases of heart disease diagnosed in Survey 1.

In regard to Survey 2, four cases of hypertensive heart disease were discovered, of which only one was diagnosed by means of mass miniature radiography—a female aged 62 with a blood pressure of 180/100. The remainder of the group were aged 45, 49, and 66. The lowest systolic blood pressure was 150 mm. Hg and the highest 180 mm.: the diastolic pressure was 100 mm. in all three subjects.

In Survey 1 there were eight cases of congenital heart disease which were diagnosed by means of mass miniature

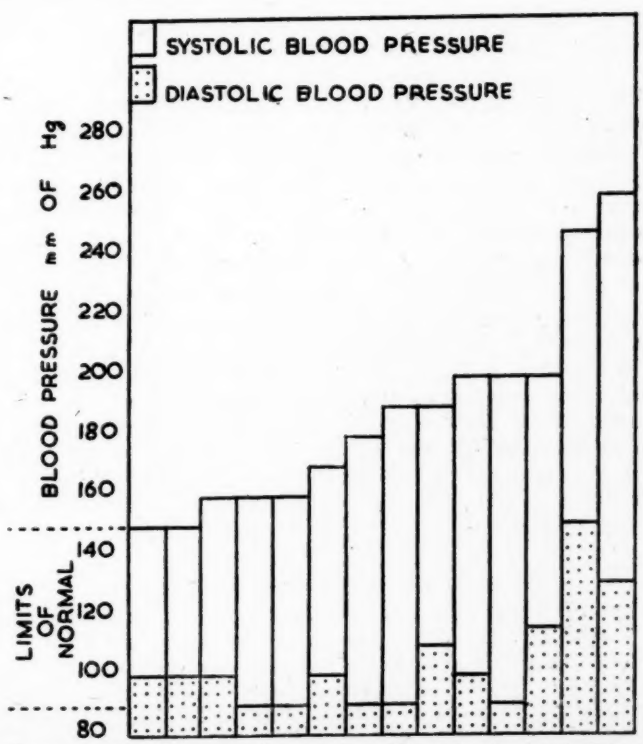

CHART 2.—Blood pressure in 14 cases of hypertensive heart disease occurring in Survey 1.

radiography. Seven of these had been previously diagnosed (Chart 1), usually on a routine school examination, though two had been diagnosed in their pre-school days. All these cases were asymptomatic, and none of them showed any sign of cyanosis or clubbing. The group consisted of two cases of patent interventricular septum (both males, aged 16 and 32) and four cases of patent interauricular septum (all males—two aged 22, one aged 31, and one aged 33). There were also two cases of dextrocardia with situs inversus, both males, aged 42 and 52. Considering the ages of the patients in relation to Campbell's observations that only one in two "blue babies" will survive to the seventh year and less than one in ten will reach the age of 10 years (Campbell, 1948), it is not surprising that cases of congenital heart disease with cyanosis were not present in this particular group.

Discussion

It has been suggested by the earlier pioneers in mass miniature radiography that it might be used for identifying cardiac abnormalities (M.R.C., 1945). No one so far has attempted to assess the potentialities of this method for disclosing the presence of cardiac abnormalities.

In the first survey we were dealing with a population containing an unknown number of cardiac cases, so that it is not possible to estimate how many were missed by the radiological screening. Of those rheumatic cases discovered, over half had already come under the supervision of their doctor on account of symptoms of varying degrees of severity. Subdividing the group into those cases diagnosed prior to mass miniature radiography and those diagnosed primarily by that means, we find that 12 of the former had symptoms, while this was true of only three of the latter.

All the cases in the hypertensive group of Survey 1 were identified from the cardiac enlargement on the miniature film; five had symptoms, and none had been diagnosed previously.

In these two groups the survey was of some value in that it identified 19 cardiac cases not previously diagnosed which would benefit from medical supervision.

None of the cases of congenital heart disease had any symptoms, nor had they any signs of cyanosis or clubbing. With the exception of the two cases of dextrocardia, all would benefit from medical supervision on account of the potential danger of subacute bacterial endocarditis. However, seven of these cases were already known to their medical advisers, so that benefit was brought to only one case by means of mass miniature radiography. There were no cases of congenital heart disease amenable to surgery.

Considering all three groups together, there were 44 cardiac cases in Survey 1, equivalent to 3.68 per 1,000. In the M.R.C. series a total of 21,178 subjects, consisting of office and factory workers in equal proportions, were *x*-rayed. In that survey 32 cardiac cases were discovered, equivalent to 1.51 per 1,000. The considerable difference in the two series is due to the fact that in the latter survey only those young cardiac patients in whom "some benefit was thought to be possible" were recalled for medical interview.

In Survey 2 all the subjects were females. The average age of this group was considerably higher than that of Survey 1; also there were a known number of cardiac cases, as all the patients had been examined on admission to hospital. In the primary radiological survey only three cases were identified by means of mass miniature radiography. Following this, all these known cardiac cases were examined personally and the clinical diagnoses checked. The relevant miniature films were looked at again to see whether any cases had been missed radiologically on the first inspection of the films. Even with the additional knowledge of the clinical condition of these patients, no further cases could be diagnosed radiologically. It appears, therefore, that mass miniature radiography is of some, though limited, value in the diagnosis of cardiac abnormalities, and that by its means some cases of cardiac disease with few or no symptoms may be revealed. It is obvious that in every survey a large number of cardiac cases must be missed, because they have not reached the stage where there are radiological abnormalities, or because the thickness of the chest wall, with or without excessive adiposity, produces such a poor miniature that it is useless for diagnostic purposes.

Summary

In two mass miniature radiography surveys 12,173 subjects were *x*-rayed; 47 cases of cardiac disease were diagnosed radiologically and checked by clinical examination.

Seventeen cases of rheumatic heart disease and seven cases of congenital heart disease had been previously diagnosed in Survey 1 (11,929 cases).

Three cases of cardiac disease were diagnosed out of a known number of 15 occurring among the 244 cases in Survey 2.

The difficulties met with in the reading of miniature films are described.

It is considered that mass miniature radiography is of value in identifying some cases of cardiac disease, though in any survey a large number are bound to be missed for technical reasons and through lack of radiological change.

It gives me pleasure to record my appreciation of the criticism and encouragement given to me by Dr. Robert Coope in the preparation of this paper. In Survey No. 2 I am indebted to Dr. MacKenzie and the staff of Newchurch Hospital for their very willing co-operation.

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The Women's Advisory Council on Solid Fuel (18, South Molton Street, London, W.1) took occasion at a conference on November 9 to draw attention to the need for effective safety appliances for kitchen ranges and open coal-fires. The seriousness of the need was pointed out by Mrs. Vera Colebrook, who said that over 100,000 cases of burns and scalds required hospital treatment in England and Wales every year. This represented a financial drain on the National Health Service of over £2m., and 300,000 bed-days could be saved if burns were prevented. Of the cases of burns 70% were caused in the home and 30% in industrial establishments, but while there were safety precautions in industry nothing was done about the domestic fire. Mrs. Colebrook criticized the rule whereby a fireguard when sold separately was not subject to purchase tax, but the tax was chargeable if the guard was incorporated in the heating appliance. Gas and electric fires with fixed guards were being exported to countries like Sweden and Iceland, where the incorporation of the guard with the fire was compulsory, but in this country a tax was imposed on the incorporated device. Two new types of guards were exhibited at the conference. One was for fixing in front of the fire when it was opened in a special type of solid fuel range. The other was an adaptation of the "cage" type of guard for the open fire, having a special door in front so that the guard need not be put aside when more fuel was added, and there was a device for fixing it firmly so that it could not be easily knocked over.

UNUSUAL CASE OF TUBEROUS SCLEROSIS

BY

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[WITH SPECIAL PLATE]

Tuberous sclerosis is a condition found in the brain as a feature of the syndrome epiloia. Critchley and Earl (1932) described 29 cases of epiloia, and in a review of the literature pointed out the essential features of the disease. Classical cases are characterized by mental deficiency, recognizable in early life, adenoma sebaceum at puberty, and epileptic fits. A psychopathic taint is often a feature of the mental state, and motor restlessness is common. A familial incidence may also be discovered. Other signs recognizable during life may include thickening (shagreen patches) of the skin, flattened dermal fibromata on the back, pedunculated dermal tags, and such stigmata as simian hands, with incurving of the little finger, and misshapen ears.

At post-mortem examination the cerebral convolutions are found to contain numerous sclerotic areas which on microscopy appear to consist of an increase in neuroglial tissue with the addition of giant cells foreign to the central nervous system. Tumours of other organs are common, including cardiac myomata and bizarre renal neoplasms varying from sarcoma to hypernephroma.

Tredgold (1947) described the condition and discussed the features of the mental state. Clinical variants occur, and Stewart (1935) recorded the sudden death in epilepsy of an apparently normal young woman. Typical sclerotic areas were found in the brain, though there was no previous history of mental deficiency or fits, and no evidence of adenoma sebaceum or renal neoplasms.

The purpose of this paper is to describe another of the *formes frustes* of epiloia which occurred in a young soldier.

Case Report

The patient was called up for national service in August, 1949. He was found fit and drafted to a selection unit. His medical documents stated: "Pigmented rash on face. Marked refractive error in both eyes—corrected to 6/6. A history of migrainous headaches." There was no history of fits of any kind. He underwent the usual selection procedure at his unit and was given the intelligence rating "S.G. 3P." This placed him in the top 50% of the Army population and showed him to be above average intelligence. The personnel selection officer made the following comments at a routine interview: "He is a man of above average intelligence and ability and has been on survey work. He is of negative personality."

It should be noted, however, that the man's instructors described him as "slow to learn," while his father later stated that although he was an affectionate boy he was not as quick as his brother. There was no family history of mental disease or of fits.

Soon after his arrival at the selection unit he reported sick with headaches. The presence of adenoma sebaceum on the face was at this time remarked upon and he was kept under observation. Four weeks later his comrades reported, at about 8.30 p.m., that he had complained of drowsiness at about 4.30 p.m., had gone to bed, and could not be roused.

On admission to hospital he was semi-comatose and restless, with alternating pulse and Cheyne–Stokes respiration. The limbs were in the position of decerebrate rigidity; the arms being flexed and legs extended. The tonic state of the limbs was described as striking. The pupils were at first equal and reacted to light, but as his condition deteriorated into deep coma they became fixed and dilated. The tendon reflexes were brisk but the abdominal reflexes were absent.

He died at 10.45 p.m., apparently from a brain-stem lesion, about seven hours after he had first complained of drowsiness.

Post-mortem Examination

External Appearance.—The body was that of a well-nourished young adult male. The pupils were dilated and equal. There was a small pedunculated papilloma close to the left nasal cleft surrounded by several sessile red and brown plaques varying from a pin's head to 2 mm. in size. Similar plaques and a tiny papilloma were visible in the right nasal cleft. A few tiny red spots were visible on the cheeks. The distribution of these plaques was of a butterfly nature and the condition appeared to be one of adenoma sebaceum. There was a small papilloma about 0.5 cm. in diameter in each groin. In the small of the back in the region of the third and fourth lumbar vertebrae there were about a dozen brown sessile plaques varying from 1 mm. to 1 cm. in diameter. A similar collection was present over the sacrum.

Central Nervous System.—The cerebral cortex was studded with firm sclerotic masses about 1 cm. in diameter. These could readily be discerned with the finger-tips, but were extremely difficult to see with the naked eye. There was no evidence of hydrocephalus or haemorrhage. The cerebellum was normal. Examination of the pons and medulla showed surprisingly little change considering the decerebrate and acute nature of the man's death.

Urinary System.—The left kidney was congested. Several white pin-point spots were visible on the surface. On cut section a round circumscribed fibrous mass was found at the upper pole 0.5 cm. below the surface. The right kidney showed a similar mass 1.5 cm. in diameter at the lower pole and another small deposit near the pelvis. No abnormalities were noticed in any other organs.

On histological examination of the central nervous system the sclerotic areas showed an increase in glial tissue, with a bizarre cellular structure. Displacement and disorientation of large nerve cells were characteristic (Plate, Fig. 1). The tumour in the left kidney was epithelial in nature and had an adenocarcinomatous appearance (Fig. 2). The other renal tumours were quite different, and consisted of vascular fibrous tissue (Fig. 3).

This patient thus showed many of the classical lesions of epiloia, including adenoma sebaceum, dermal tags and plaques, tuberous sclerosis, and bizarre renal neoplasms. His normal intelligence and the absence of any history of fits were unusual features.

Summary

Sudden death in a young adult is described in which the typical lesions of epiloia were found with recent evidence of normal intelligence and no evidence of fits.

A similar case described by Stewart (1935) did not exhibit adenoma sebaceum or renal neoplasms.

I am indebted to Lieutenant-Colonel W. D. Hughes, R.A.M.C., officer in charge, Medical Division, Cambridge Hospital, for the clinical details and valuable advice and encouragement, and to Captain T. D. S. Oswald, R.A.M.C., for the previous history and for his interest in the preparation of this report. I also thank the late Dr. K. Paddle, medical superintendent, Botleys Park Mental Colony, Chertsey, and his colleagues for their kindness in demonstrating their cases of typical epiloia; Dr. J. G. Greenfield, of the National Hospital for Nervous Diseases, for his kindness in examining the sections; and Captain J. L. Garson, R.A.M.C., for the photomicrographs.

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Medical Memoranda

Pernicious Anaemia and Tumours of the Stomach

The following two cases are considered worthy of record as illustrating the association between pernicious anaemia and gastric tumours.

CASE 1

A 55-year-old man attended the Manchester Royal Infirmary in October, 1946, and was found to be suffering from pernicious anaemia. Fractional gastric analysis showed complete achlorhydria. There was a rapid response to parenteral liver therapy and he was maintained in good health with normal blood count by continued treatment.

In January, 1949, he had a small haematemesis with uneventful recovery, and in June was admitted to hospital under the care of Dr. A. H. Holmes for investigation. He stated that he felt quite well and denied having dyspepsia either before or since the haematemesis. There were no abnormal physical signs, and the results of investigations were as follows: blood count was normal; examination of the faeces for occult blood was positive, and barium-meal examination revealed a smooth mobile filling defect close to the greater curvature of the stomach suggestive of a polyp. This was confirmed gastroscopically by Dr. C. S. D. Don, and a Schoemaker gastrectomy was performed by Professor John Morley. There was no evidence of the presence of other polyps.

Pathological Report.—The portion of the stomach removed contained a tumour situated on the anterior wall close to the greater curvature towards the pylorus. The tumour consisted of two parts, the larger pedunculated and the smaller sessile. Histologically it was an adenomatous gastric polyp with no evidence of malignancy.

CASE 2

A 54-year-old woman had a subtotal thyroidectomy for hyperthyroidism in May, 1946; at that time the blood count was: red cells, 4,900,000 per c.mm.; haemoglobin, 92%; colour index, 0.94; white cells, 7,200 per c.mm. Her health improved after the operation, but in February, 1948, she was readmitted to hospital under the care of Dr. A. H. Holmes complaining of epigastric discomfort, dysphagia at the xiphisternum, and loss of weight, over the last year. The tongue had recently been sore and atrophic glossitis was present. She was wasted and pale. A hard mass was felt in the epigastrium to the left of the midline, and the liver edge was 2 in. (5 cm.) below the right costal margin; it was also thought that the spleen was just palpable.

A blood count showed: red cells, 3,460,000 per c.mm.; haemoglobin, 78%; colour index, 1.13; white cells, 6,700 per c.mm., with normal differential count; the sternal marrow was megaloblastic. Fractional gastric analysis showed absence of free HCl with very low total acid. *X*-ray examination revealed a large filling defect in the fundus and body of the stomach. It was apparent that she had both pernicious anaemia and gastric carcinoma. Intramuscular liver injections resulted in a reticulocyte response reaching 31% on the sixth day, but the haemoglobin did not rise. Laparotomy was carried out by Professor A. M. Boyd, and an inoperable gastric carcinoma with metastases in the liver and peritoneum was discovered. She was discharged from hospital and died soon afterwards.

COMMENT

In the past few years increasing attention has been drawn by American workers to the coexistence of pernicious anaemia and gastric epithelial tumours. Kaplan and Rigler (1945) made a study of 43,021 consecutive necropsies and were able to find 293 cases of pernicious anaemia, 36 of which also had carcinoma of the stomach, an incidence of 12.3%; this was over three times the incidence in the remaining necropsy population of the same age. Concerning benign tumours of the stomach, it is interesting to note that Brown (1934) found 12 gastric polyps (8%) among 151 cases of pernicious anaemia in 18,200 necropsies.

Kaplan and Rigler (1947) also carried out repeated radiological and gastroscopic examinations of patients with pernicious anaemia, and out of 259 such patients 18 (6.9%) were found to have carcinoma of the stomach, and 17 (6.6%) had benign polyps. Bourne (1948) similarly investigated 15 patients with pernicious anaemia over a period of two years and found three symptomless gastric carcinomas, one polyp, and one leiomyoma. Other authors have also reported a high incidence of gastric polyps in pernicious anaemia (Doehring and Eusterman, 1942; Washburn and Rozendaal, 1938). Velde (1938) found six such cases (14%) in a series of 42 patients with pernicious anaemia, as contrasted with an incidence of only 0.7% in a control series of patients with other diseases.

The tendency to the development of gastric polyps displayed by such patients is clearly of great importance when one considers the frequent development of malignant changes in such tumours (Stewart, 1929; Miller *et al.*, 1930; McRoberts, 1933; Lawrence, 1936; Rigler and Erickson, 1936). It is of interest that gastric carcinomas developing in patients with pernicious anaemia are usually of polypoid type and situated in that area of the stomach which Magnus and Ungley (1938) have shown to be atrophic in this disease—namely, the body and fundus.

Wilkinson (1949) stated: "My series produced 28 gastric cancers in 1,532 patients who lived—i.e., 1.83%, or on the basis of total fatal cases (28 gastric cancers in 301 dead pernicious anaemia patients) a frequency of 9.3%—and therefore suggests the necessity for regular and frequent examination of all patients with pernicious anaemia." The most rational explanation of the occurrence together of the two diseases is that both are the result of the same inherent abnormality of the gastric mucosa.

It should be noted that our second case is rather unusual in that the carcinoma and pernicious anaemia apparently arose within a short period of each other, as a blood count performed less than two years before both diagnoses were made was quite normal. As we have pointed out above, in all probability the pernicious anaemia and the carcinoma shared a common "ancestor," whatever that may be; it is conceivable, however, that in our patient the carcinoma actually produced the pernicious anaemia by virtue of its localization in the fundus and body of the stomach.

ADDENDUM: Since our submission of this paper, Mosbech and Videbaek (*British Medical Journal*, 1950, **2**, 390) have recorded 15 cases of gastric carcinoma occurring among 301 patients with pernicious anaemia. These authors considered that the gastric carcinomas of patients with pernicious anaemia had the same anatomical distribution as in normal people.

We wish to thank Dr. A. H. Holmes for his encouragement and advice, and the other physicians and surgeons of the Manchester Royal Infirmary mentioned in the text.

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Atresia of the Small Intestine

Congenital atresia of the intestine is not a common condition and it is rarely diagnosed at a stage when surgical treatment holds out a hope of success; yet early diagnosis is relatively simple.

Vomiting always occurs on the first day of life and is persistent and increasing (Ladd and Gross, 1941). It almost invariably contains bile. These two findings distinguish the condition from hypertrophic pyloric stenosis. The stools are usually small, dry, and lighter in colour than normal meconium (Ladd and Gross, 1941; Potts, 1947). Absolute constipation is not the rule. Abdominal distension is variable, depending on the duration of the symptoms and the level of the lesion. When the atresia is in the ileum distension is usually marked and visible peristalsis is often present (Ladd and Gross, 1941; Potts, 1947). Dehydration is pronounced only if the condition has persisted for some days.

A plain radiograph of the abdomen, particularly if taken with the infant held erect, will not only establish the diagnosis of obstruction but will give a clue to its approximate level. The administration of barium in these cases is not only unnecessary but may be dangerous, as an inhalation of vomited barium may give rise to a fatal pneumonia.

Farber's test depends on the fact that normal meconium contains cornified epidermal cells from swallowed liquor amnii. If microscopical examination of a specimen of meconium (taken from the centre of a stool) shows absence of such cells complete obstruction of the intestine may be assumed. As stenosis is not excluded this test would seem to be of more academic than practical value. It should be stressed that repeated vomiting during the first 24 hours of life indicates the urgent need for radiographic investigation.

CASE REPORT

A baby girl, born at 4.30 p.m. on July 31, 1949 (weight, 6 lb. 12 oz.—3.06 kg.), was admitted to hospital at about 1 p.m. the next day with a diagnosis of imperforate anus and a history of repeated vomiting since birth and failure to pass meconium.

On examination the abdomen was distended. Ladder patterns and visible peristalsis were seen over the central and upper abdomen. Her clothes showed evidence of bile-stained vomit. Per rectum there was no difficulty in inserting a finger, and examination was followed at once by the passage of a normal looking tarry meconium. A radiograph of the abdomen (erect position) showed coils of distended small bowel with fluid levels. The radiologist (Dr. J. O. Y. Cole) reported "small-gut obstruction, probably mid-ileum."

A 10E rubber urethral catheter was passed into the stomach, and repeated aspirations were carried out. About 1 oz. (28 ml.) of bile-stained fluid was aspirated. Ringer-lactate solution, 100 ml., was injected subcutaneously.

Operation.—Anaesthesia was induced by ethyl chloride followed by nitrous oxide, oxygen, and ether (Dr. Reid). A right paramedian incision centred opposite the umbilicus and 3 in. (7.5 cm.) in length was made. Grossly distended loops of small intestine presented and were allowed to prolapse freely. The distended bowel ended blindly about mid-ileum, and at this point the gut was almost 2 in. (5 cm.) in diameter and very thin-walled, but not gangrenous. For the next 2 in. there was complete absence of intestine, the mesentery ending in a free edge just distal to the vascular arcades. The distal bowel was extremely small, the diameter being less than ¼ in. (0.6 cm.).

With a fine hypodermic needle some 30 ml. of air was injected into the distal loop, which promptly dilated to about ½ in. (1.25 cm.) diameter and the pelvic colon could be felt distended with air. The proximal loop was aspirated and much gas and a little brown fluid were withdrawn, causing the loop to collapse considerably. The needle puncture was turned in with a purse-string suture of 3/0 chromic catgut.

Using light clamps, a 1½-in. (3.75-cm.) side-to-side anastomosis was made between the two loops by standard technique. As no suitable non-absorbable suture was available 3/0 chromic catgut on an atraumatic needle was used for both layers. No tube was used and anastomosis was not difficult. The gap in the mesentery was closed and the bowel was returned to the abdomen. The abdomen was closed in layers, using 2/0 chromic catgut for the deep layers and fine nylon for the skin.

The gastric catheter was left in place and aspirated hourly. Ringer-lactate solution, 100 ml., was injected subcutaneously at four-hourly intervals for 24 hours. Rectal salines, 4 oz. (114 ml.), were injected four-hourly, partly with a view to increasing fluid intake, but chiefly to distend the distal bowel. Penicillin, 50,000 units three-hourly, was given. The infant was nursed in an incubator with extra oxygen.

On August 2 only a few ounces of bile-stained fluid were aspirated. The bowels opened 12 hours after operation—meconium and a little blood. Next day, with the gastric tube in position, 1 oz. of 5% glucose was fed to the infant from a spoon at hourly intervals and aspirations were continued hourly (midway between feeds). After a few hours it was obvious that the fluid aspirated was much less than the intake. The bowels moved once again. Subcutaneous and rectal fluids were discontinued, the gastric tube was withdrawn, and glucose water was continued and gradually increased.

Three-hourly feeding with a reconstituted food was begun on August 4. From this point the feeding and care of the infant were left entirely to the nursing staff of the maternity unit and the baby was treated as "premature." The successful outcome of the case is due in no small measure to their devotion and skill. The child was discharged on September 17 and, apart from some fat intolerance, was normal. When seen on November 7 she was progressing normally and her weight was 11 lb. 4 oz. (5.1 kg.).

HARRY M. BENNETT, F.R.C.S.Ed

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Ladd, W. E., and Gross, R. E. (1941). *Abdominal Surgery of Infancy and Childhood*. Philadelphia.
Potts, W. J. (1947). *Surg. Gynec. Obstet.*, **85**, 14.

In the not-too-distant future the number of pharmaceutical research scholarships may be substantially increased. Mr. C. W. Maplethorpe, chairman of the Pharmaceutical Society's education committee, stated in the course of an address on the society's education policy. There are already three such scholarships of the annual value of £300 each. A lease of a building, he added, had been taken for the establishment of a well-equipped laboratory for work in connexion with the scientific publications of the society. Because of the new opportunities in pharmacy, more young people were entering the profession. Since January they amounted to 784, and if the number of entries during the remainder of the year was at the same rate as last year they would exceed the entry figures for any year since 1933.

Reviews

SUPERVOLTAGE RADIOTHERAPY

Supervoltage Roentgentherapy. By Franz Buschke, M.D., Simeon T. Cantril, M.D., and Herbert M. Parker, M.Sc. From the Tumour Institute of the Swedish Hospital, Seattle, Washington. (Pp. 297; illustrated. £3 17s. 6d.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1950.

During the last two decades there has been much technical progress in radiotherapy, and one of the principal changes was the application, for therapeutic use, of *x* rays generated at over half a million volts (in the so-called supervoltage range). In this book the authors record their clinical experience with an 800-kV apparatus installed in 1932—in the pioneer stages of supervoltage development—which has continued to provide a satisfactory radiation beam. Physical considerations discussed in the opening chapter include the lay-out of the Villard circuit, protection, and measurements of radiation quality and quantity. The effective wavelength of the beam, 0.0245 Å, is satisfactorily low for a pulsating type of circuit at 800 kVp, but the heavy filtration necessary reduces the dosage rate to about 20 r per minute at one metre focus-skin distance. The *x*-ray beam is projected vertically downwards from an aperture in the ceiling of the treatment room, and spatial angulation has to be made by adjusting the patient's position relative to the fixed beam; this, the authors admit, is an outstanding weakness of the arrangement. The physical advantages claimed for supervoltage therapy are, in addition to the improved depth dose in treating deep-seated lesions, the reduction in skin reaction and the restriction of radiation to the geometric beam, thereby diminishing the constitutional upset of the patient.

Throughout the chapters on the irradiation of malignant disease at various sites the emphasis is on clinical aspects, and many detailed and well-illustrated case histories are included. Statistical analyses are limited, because the authors feel that "at this stage there is more to be gained by a discussion of the particular patient, his disease, and reactions to treatment than can be gained from statistical evaluation." The importance of deep mucosal reactions, and not skin reaction, as the factor limiting permissible dosage in many sites is well brought out in these chapters. Supervoltage therapy, they find, has been used with advantage in advanced carcinomata of the oral cavity and pharynx, especially of the base of the tongue. In carcinoma of the maxillary antrum and larynx they believe the response to depend more on the histological type of the growth than on the dose or energy of the radiation. In oesophageal and bladder growths the results obtained are distinctly encouraging, but breast carcinoma the authors regard pessimistically from a radiotherapeutic viewpoint. In a detailed discussion of the problems presented by carcinoma of the cervix uteri they emphasize the dangers of over-irradiation in the pelvis, where again the limiting factor is the reaction of the intestinal mucosa.

The authors conclude that "supervoltage roentgentherapy has a limited but definite place in an institution which tries to give the cancer patient the benefit of whatever increment has been made in radiation therapy." Their experience has, however, been limited by the lack of flexibility of their apparatus, so that the full benefit of modern supervoltage therapy by multiple beam-directed small fields could not be readily attained. Many radiotherapists now about to use supervoltage therapy for the first time will find in this book a well-produced, fully documented, and clearly illustrated account of the clinical effects of supervoltage radiation on normal and malignant tissues.

ARTHUR JONES.

VENOUS PRESSURE

A Primer of Venous Pressure. By G. E. Burch, M.D. (Pp. 174; illustrated. 28s.) London: Henry Kimpton. 1950.

As stated in the preface, this short monograph is intended for the beginner. It is designed to arouse his interest in the venous pressure and its bearing on clinical problems, so that he may better understand and manage his patient. After reading the 164 pages and studying the 170 diagrams, the novice is unlikely to be a better doctor: he will certainly be unable to estimate the venous pressure at the bedside, unless already taught how to do so elsewhere, and he will be unaware of the chief fallacies in such estimations. This is a pity, especially since the clinical value of measuring and understanding the venous pressure is repeatedly emphasized. The author presents much anatomical and physiological information about the veins in various parts of the body, but it is questionable whether these are the facts the clinician wants to know. His interest might have been captured more securely if his difficulties had been better appreciated and met. For example, at the bedside it is almost impossible to consider the central venous pressure without reference to the venous pulse; but Professor Burch dismisses the jugular pulse in 10 lines. He may have had good grounds for doing so, perhaps because he believed it had little to do with his subject; but it is hard to see why. His attitude would excite more sympathy had the title of the book been "A Primer of Peripheral Venous Pressure."

At the bedside the clinician tries to distinguish one cause of raised venous pressure from another, and in doing so he naturally attempts to analyse the venous pulse. In this way he can recognize tricuspid incompetence, tricuspid stenosis, and a group of conditions that give rise to strong right auricular contractions, and so distinguish them from congestive failure. Differences of opinion on the interpretation of the hepato-jugular reflux are not considered, yet there has been and still is much controversy about this elemental phenomenon. The venous pressure is considered in relation to sex, race, age, altitude, and nutrition, but not in relation to bradycardia, pregnancy, menstruation, fever, or anaemia.

Despite such drawbacks much valuable information has been collected and is presented in a manner characteristic of Professor Burch's other works. The book is recommended to those who wish to study the peripheral venous pressure more seriously, and to research workers who are interested in problems relating to the venous pressure. But students and clinicians may find it disappointing: much is offered that they may not want to know; much that they may seek is omitted.

PAUL WOOD.

TUBERCULOSIS OF THE HIP

Coxitis tuberkulosa. By Dr. Herbert Gardemin. (Pp. 166; 245 figures. M. 18.) Berlin and Munich: Urban and Schwarzenberg. 1950.

The secondary title of Dr. Herbert Gardemin's book on tuberculosis of the hip is "A Contribution to the Radiological Pathology of Skeletal Tuberculosis." The volume is primarily intended for radiologists, but, as the radio-

logical appearances are related to pathological findings, a wide field is covered, and the book will be of interest to all concerned with the long-term treatment and diagnosis of this disease. The author pays particular attention to the early features of the disease and the detection of the minimal lesion. There is a well-illustrated series of cases showing the main primary sites of infection and their progress. A knowledge of this is of value in forming a prognosis and some assistance in deciding when operative treatment should be carried out.

The author carefully analyses the relationship of the radiological appearances to the healing process. This point is obviously important if minimal immobilization is the goal of treatment. The undesirable influence of pus and caseation in healing is well shown, though its presence does not appear to excite any direct effect on reparative ossification, which starts in the majority of cases from the acetabular area.

In general, the findings emphasize the value of conservative treatment. It is a pity that the space devoted to the discussion of differential diagnosis is disproportionate to the rest of the volume. A diet of rich detail of one aspect raises an appetite for a similar exposition of the imitative lesions.

J. G. BONNIN.

SOMATOGENIC ILLNESSES

Klinische Psychopathologie. By Kurt Schneider. Third edition. (Pp. 179. M. 11.40.) Stuttgart: Georg Thieme. 1950.

The various schools of psychopathology differ in their basic assumptions and the type of clinical data on which they build their systems. This book starts out with a sharp division of psychological disorders into two categories: mental illness, which is due to somatic disease or malformation; and mental abnormality, which is merely an excessive deviation from a normal average. The author claims that this distinction is supported by clinical experience, which revealed to him that transitional conditions between the two categories are exceedingly rare, so that diagnostic difficulties in distinguishing between them hardly ever occur. For example, he has rarely been in doubt whether a patient should be classified as schizophrenic or manic-depressive, or whether he should be regarded merely as an abnormal personality. Therefore he concludes that schizophrenia and manic-depressive psychosis are due to an as yet unknown somatic disease—a rather daring conclusion in view of the slender, subjective, and speculative basis on which it rests.

The psychopathology of these two categories of mental disorder are treated in a different manner. Discussing the somatogenic illnesses, the interest of the author is focused on the kind of symptom which can be caused by the underlying somatic disease. In this section of the book he therefore concentrates on a careful and detailed description of the possible symptomatology. He also classifies the symptoms into two groups according to the diagnostic value they have.

When he turns to his second category of mental disorders the author does not limit himself to descriptive analysis and classification. The deviations with which he deals in particular are abnormal intellectual endowment, abnormal personality, and abnormal reactions to experience. A delineation of psychopathic and neurotic personality types is attempted, but only limited clinical usefulness is claimed for it. These descriptive formulations are supplemented by dynamic considerations of the interaction between constitutional trends and individual experiences. The views in these chapters approach certain concepts which have been developed by the psycho-analytical school. But the author is critical of these concepts and underlines the difference from them of his point of view. The name of Freud is never mentioned, not even in disagreement. Nor does the term "unconscious" appear in the book; it has to be replaced by such cumbersome circumlocutions as "the basis which is not and cannot be experienced," and "the background of previous experiences which need not be immediately recalled."

F. K. TAYLOR.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received

A Handbook on Diseases of Children. By B. Williamson, M.D., F.R.C.P. 6th ed. (Pp. 440. 17s. 6d.) Edinburgh: E. and S. Livingstone. 1951.

Life Among the Doctors. By P. de Kruif. (Pp. 479. 16s.) London: Jonathan Cape. 1950.

Just ... Medley of Amusing Tales and Interesting Medical and Legal Experiences. By "An Old Retired Scotch Doctor." (Pp. 80. 5s.) Reigate, Surrey: George J. Hieatt. 1950.

Injuries of the Knee Joint. By I. S. Smillie, O.B.E., Ch.M., F.R.C.S.Ed., F.R.F.P.S. 2nd ed. (Pp. 391. 50s.) Edinburgh: E. and S Livingstone. 1951.

Le Salmonellosi nell'Uomo. By G. Scotti and G. T. Sicca. (Pp. 143. $3.50.) Pisa: Omnia Medica. 1950.

Medical Dictionary. By Dr. E. Veillon. (Pp. 1,407. 126s.) London: H. K. Lewis. 1950.

The Care of Young Babies. By J. Gibbens, M.B., M.R.C.P. 3rd ed. (Pp. 204. 5s.) London: J. and A. Churchill. 1950.

You are Younger than You Think. By M. Gumpert, M.D. (Pp. 261. 10s. 6d.) London: Hammond and Hammond. 1950.

The Mystery of Dreams. By W. O. Stevens. (Pp. 280. 16s.) London: George Allen and Unwin. 1950.

Dental Surgery and Pathology. By T. W. Widdowson, F.D.S., R.C.S.Eng., and E. V. B. Widdowson, L.D.S., R.C.S.Eng. 4th ed. (Pp. 745. 63s.) London: Staples Press. 1950.

Health and Disease in the Tropics. By C. Wilcocks, M.D., F.R.C.P., D.T.M.&H. (Pp. 200. 15s.) London: Geoffrey Cumberlege. 1950.

Santa Claus, M.D. By W. W. Bauer, M.D. (Pp. 266. $2.75.) New York: The Bobbs-Merrill Company. 1950.

La Constipation. By M. Chiray and R. Stieffel. (Pp. 189. No price.) Paris: L'Expansion Scientifique Française. 1950.

Les Hémorroïdes et leur Traitement. By R. Bensaude and P. Oury. 3rd ed. (Pp. 209. 650 francs.) Paris: L'Expansion Scientifique Française. 1950

Recent Advances in Ophthalmology. By Sir Stewart Duke-Elder, K.C.V.O., M.A., D.Sc., LL.D., Ph.D., M.D., F.R.C.S., F.A.C.S., and A. J. B. Goldsmith, M.B., B.S., F.R.C.S. 4th ed. (Pp. 372. 28s.) London: J. and A. Churchill. 1951.

The Pathogenesis and Pathology of Viral Diseases. Edited by J. G. Kidd. (Pp. 235. 32s. 6d.) London: Geoffrey Cumberlege. 1950.

Contribution à la Thérapeutique Biologique de L'Alcoolisme Chronique: Le Traitement par L'Apomorphine. By H. Feldmann, M.D. (Pp. 239. 800 francs.) Paris: L'Expansion Scientifique Française. 1950.

Das Problem der Bisexualität. By Professor B. Breitner. (Pp. 77. M. 5.) Vienna: Wilhelm Maudrich. 1951.

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DISPLACED REGISTRARS

Since July, 1948, no action of the Minister of Health has caused such disquiet and anxiety as the recent decision summarily to dismiss over 1,000 registrars from the hospital service of this country. The first and most ominous ground for disquiet is this unpleasant reminder of the absolute powers of the Minister. As short a time ago as 11 months the Ministry of Health published a memorandum on the development of consultant services,[1] in which it made this reference to the increase and distribution of consultant staff: "Thus for the first time there is generally available the means of providing additional staff where it is most needed. . . . The deficiency in numbers can be made good only gradually, because the training of consultants is necessarily long." This memorandum, which had been circulated to hospital boards a year previously to guide them in planning consultant services, was generally welcomed as making a constructive approach to the evolution of a consultant service adequate to the needs of the community. In fact, in the first paragraph of the memorandum it was admitted that there are too few consultants to meet the needs of the whole population. This is a matter on which the medical profession and the Ministry of Health are in agreement, and yet what does the Minister do within a year of publishing the memorandum? He cuts the present registrar strength by half and at the same time introduces as a *long-term policy* a proposal which does not yet seem to have aroused enough interest in the profession—namely, that general practitioners should serve as clinical assistants in hospitals in order to meet "staffing difficulties in the senior registrar field." Here is a radical change in policy which has been introduced without agreement by the medical profession. When questioned in the House of Commons Mr. Aneurin Bevan gave a completely false impression when he stated that the proposals relating to registrars had been introduced after consultation with the profession. The falsity lay in the implication that consultation implied agreement. As was made clear in a statement in the *Supplement* to last week's *Journal*, the Joint Committee, representing the Royal Colleges and Corporations and the B.M.A., did not accept the Ministry of Health's proposals. A further statement in this week's *Supplement* makes the position of the Joint Committee unambiguous, and it is urging the Ministry to postpone action on the proposals made and at the same time to reopen discussions on the whole question of registrars in relation to the consultant service of the country. An organization from which Mr. Bevan might have expected some support has, on the contrary, peremptorily demanded "the immediate withdrawal of circular RHB (50) 106." The Socialist Medical Association, which has made this demand, agrees with the Joint Committee when it states that "the circular shows a total failure to understand the importance of the contribution made by registrars to the hospital service. By concentrating on the training they receive it fails to appreciate how much of the essential work on the wards and in the out-patient departments is done by registrars, many of whom are in fact doing consultants' work."

The second disturbing feature of the Minister's recent action is the failure on his part—or perhaps we should say on the part of those who advise him—to appreciate the position of registrars in hospitals and his failure to go ahead with the policy of expanding the consultant services of this country in relation to the needs of the community. Part of the trouble has arisen because of the Minister of Health's apparent habit of regarding registrars merely as trainees. They are of course trainees in the sense that every doctor who practises medicine is undergoing a constant training for his job, if only for the reason that he is always having to learn how to use new methods and new tools. It is absolutely essential that the Minister and his Department should realize that the work of registrars is indispensable to the hospitals of this country and should be related primarily to the needs of the hospital—that is to say, to the needs of the patients in the hospital—and only secondarily to prospective vacancies in the consultant world. It may well be that in some hospitals there are too many registrars, just as in other hospitals there are too few; but the possibility of making arrangements for transfer was envisaged in the Ministry's memorandum on consultant services. No one would pretend that everyone who gets a job as a registrar should be a consultant. This again is one of the unfortunate results of talking about the registrars as being trainees. Before July, 1948, a man was appointed to be a registrar because there was a job of work to be done. At the same time the appointment gave him a chance, and his seniors a chance, to see whether or not he would be likely to make a career as a consultant. But whatever his future, the registrar was under no illusion about his present—and that was that he was an indispensable and hard-working member of the hospital team. Among those factors that decided his future when he came to the end of his time as registrar was the possibility of finding an opening in consulting practice, and this almost invariably depended on

[1] London, H.M.S.O., 1950, 9d. net.

obtaining an appointment to a hospital staff. Whether or not there were vacancies available, not all registrars, obviously, had those qualifications which fitted them for a consultant's career, and no one would pretend that all the existing 2,800 senior registrars and registrars should automatically become consultants. It is unfortunate that the idea of their being trainees should have led them to expect this. Nevertheless, we cannot but believe that a good many of the 1,100 who are to be dismissed have the capacity and ability to take up consultant work.

We understand that regional hospital boards and boards of governors would like to create something in the region of 1,000 new consultant posts in the hospital service of the country. Why, therefore, has the Ministry of Health been in such a hurry to get rid of so many potential consultants at a time when they must have been fully aware of the expected demands to be made on them for carrying out the declared Government policy of expanding the consultant service to meet the needs of the community? Mr. Bevan said about the circular on registrar establishments: "It was not prompted by economy—indeed, it provides for alternative appointments if necessary for the work of the hospital." If the pending action is not economic in origin, what is the explanation? It is known that hospitals generally need registrars; the registrars want to do the work; hospitals all over the country are, in fulfilment of the Minister's policy, anxious to make new appointments, in addition of course to filling vacancies created by retirement or death. It may be politically embarrassing for the Minister to admit that the economy of the Health Service as a whole is so overstrained as to call for a standstill in the development of the hospital services. In 1949 Sir Stafford Cripps said in his budget speech that there were to be no supplementary estimates except in special cases. This year he said emphatically that present expenditure on the Health Service must not be exceeded. It is quite plain that the finances of the Health Service have got completely out of hand and that the present decision about registrars is dictated primarily by the need for economy.

The Minister of Health must by now realize that the medical profession as a whole, in the working of its three main services, is in a state of acute dissatisfaction and frustration. It is, we are convinced, anxious to co-operate with the Minister and his Department provided it is able to work with a full sense of co-partnership in an enterprise that should call forth the best out of everyone. It can do this only if, to use a well-worn phrase, the cards are laid face upwards on the table, only if there is frank disclosure of all the facts in a total situation instead of a partial, piecemeal disclosure in an order that seems to be completely illogical. In so far as the present problem is concerned, and its relation to the wider problem of the consultant services of the country, it may well be worth looking into the feasibility of establishing permanent joint consultative machinery for making possible a continuous review of consultant and hospital services by both the Ministry of Health as representing the management, and medical men as representing those who work in the service. This would be something quite other than those standing advisory committees appointed by the Minister. Medical representatives in some such joint consultative mechanism should be appointed by the profession itself. With machinery of this nature, such problems as are worrying the profession now would not arise, and a smoother evolution of the consultant services on constructive lines might well be made possible. If things go on as they are the Health Service will sooner or later become a warning rather than an example to the rest of the world.

TUBERCULOSIS AND THE N.H.S.

Such captions as "Whither Tuberculosis?" "Tuberculosis at the Crossroads," and "Crisis in Tuberculosis," all of which have appeared recently in this *Journal*, themselves express the prevailing dissatisfaction with the development of the tuberculosis services in Britain since July, 1948. Recruitment of doctors to clinic and sanatorium work is already falling short of needs. Behind all the discontent and argument stand the facts that the mortality from tuberculosis is decreasing rapidly, that the number of new cases is increasing, that the average age at the time of first infection with tubercle bacilli is rising, and that the expectancy of life of tuberculous persons is lengthening.

Special reports on what is the most important infectious disease in this country have been published by such bodies as the Joint Tuberculosis Council,[1] the Tuberculosis Group of the Society of Medical Officers of Health,[2] a special joint subcommittee in Scotland,[3] and lastly the Tuberculosis and Diseases of the Chest Group Committee of the British Medical Association. A summary of this last committee's report appears in this issue at page 1382. It describes the present situation as a "national scandal," and later asserts that the Ministry of Health clearly intends "that existing tuberculosis organizations are to be expanded into a branch of medicine dealing with all diseases of the chest." In outlining the organization of the tuberculosis service the Group Committee emphasizes once again the need for well-equipped and well-staffed clinics for diseases of the lung. Those responsible for the administration of the National Health Service must realize that these demands are based

[1] *Joint Tuberculosis Council Reports*, September 16, 1944.
[2] *Publ. Hlth.* 1948, **61**, 195.
[3] *British Medical Journal*, 1950, **2**, 61.
[4] *Brit. J. soc. Med.*, 1950, **4**, 143.
[5] *British Medical Journal*, 1948, **2**, 870

on the carefully considered conclusions of experienced chest physicians who are making a conscientious plea for a service vital to the nation. In discussions on hospital accommodation there is often a tendency to forget that not all tuberculous patients require costly modern treatment, and some readers of this report will be surprised at the statement that "a sanatorium of less than 200 beds is not an economic unit." There is no harm in aiming high, but there is a present shortage of money, materials, and persons. The peak of the incidence of respiratory tuberculosis is moving to the higher age groups, and elderly patients do not necessarily require the same treatment as young adults. In the admirable section on prevention, care, and aftercare—and indeed throughout the whole report—the Group Committee insists that prevention, social welfare, and aftercare of tuberculous families are inseparable from the clinical work of the physician. Reference is also made to the rehabilitation of tuberculous students, and it will probably not be long before practical steps are taken to meet the great need for accommodation where "convalescent" students can continue their studies. In general the Group Committee's report, unlike that of the Scottish subcommittee, does not contain precise suggestions for getting over temporary difficulties until the full proposals can be carried into effect, but it does give a clear picture of the unsatisfactory condition of the existing tuberculosis services.

It would not be fair to attribute to the Ministry of Health all the blame for the deterioration of these services. Before July, 1948, the main criticisms were that they were very uneven in quality, and that the tuberculosis officer was the minion of the medical officer of health, had little or no opportunity for treating patients, and was not recognized as a clinical specialist. Complaints were made that the salaries of tuberculosis officers were too low, that progress was being prevented by the parsimonious attitude of many local authorities, and that the prognosis in individual cases sometimes depended largely on the geographical situation of his home. Many of these justifiable grievances have been met by the National Health Service Act. To-day the slogan is, "Give us beds, and the tuberculosis problem will be solved." But it is to be hoped that this appeal will not be answered by providing only expensively equipped specialized units for thoracic surgery without the smaller, less expensive, convalescent or segregation homes that were of such value in the past. Some of these useful institutions have been recently closed as not being suitable for the treatment of tuberculosis—an action that shows how little some administrators understand the tuberculosis problem. Over 4,000 tuberculosis beds are still empty because of the shortage of nurses, and until they can be filled again very careful thought must be given to the best use of accommodation and also to the possibility of home treatment. The homes of tuberculous patients are often unsatisfactory, and additional proof, if any were needed, of the association between bad housing and tuberculosis has recently been provided by Stein,[4] of Edinburgh. Nevertheless, as Professor F. R. G. Heaf points out in a paper of particular interest to all tuberculosis workers (see page 1353), some patients can be successfully treated by modern methods in their own homes, though not at a small cost. Suitable precautions can reduce to a minimum the risks of home treatment. Heaf suggests that the three essentials for successful home treatment are: full co-operation of the patient and his family; freedom from financial anxiety; and the possibility for the patient to obtain the necessary rest in bed. To this must be added the important proviso that the home as a house is suitable—not an easy condition to secure with the present shortage of houses.

The successful campaign against tuberculosis, as Lloyd[5] emphasized in 1948, cannot be modelled on the "all too common procedure of hospital and out-patient departments." It is no ordinary disease that can be tackled in the general provision for diseases of the chest but a systemic infection that has wide repercussions on the life and work of the nation. Well-equipped clinics, where the whole family can be supervised, are needed to strengthen the measures taken to prevent the spread of infection in homes, factories, or schools. The necessity for a close link with the public health service must never be forgotten. In an article published at page 1380 Dr. G. F. B. Page very rightly reminds us of Sir Robert Philip's conception of a co-ordinated tuberculosis scheme, with the dispensary (Dr. Page prefers that term to "clinic") as the directional centre. The weak spot in the present administrative arrangements is lack of co-ordination. This shows itself in many ways, even in uncertainty about the contracts and salaries of physicians for chest diseases. Page is inclined to think that since the local authorities have had their chance and have not been very successful the whole control of the tuberculosis service should be turned over to the regional hospital boards. Heaf, on the other hand, believes that the problem of tuberculosis cannot be satisfactorily tackled under the National Health Service as it exists at present, and he suggests the creation of a separate tuberculosis administration. In the North of Ireland a tuberculosis authority has been established, but it remains to be seen how effective its work will be. Since the National Health Service Act was passed much has been said and written about the defects in the arrangements for the control of tuberculosis. It is nearly six months since we wrote in these columns, "What is needed now—desperately needed—is not reports but action." The longer the present drift continues the more difficult will become the control of this disease.

CORTISONE AND A.C.T.H. IN BRITAIN

We understand from a newspaper report[1] that the Ministry of Health is to distribute small quantities of "cortisone" and A.C.T.H. to hospitals in various parts of the country. This will be welcomed both by doctors, who are anxious to learn more about these substances, and by the patients with rheumatoid arthritis and other diseases relieved by treatment with them. The necessity for co-ordination in this clinical research is obvious, since the supply of the drugs will be small, though presumably constant, and there may well be an inclination on the part of the selected hospitals to give short courses in order to observe the responses in a wide variety of conditions. The rheumatic diseases are likely to take first place in the use of cortisone and A.C.T.H. Recently the original team[2] from the Mayo Clinic have reported on a second series of cases of rheumatoid arthritis, studied for a much longer period than the first. This report and publications from other American centres and from Copeman and his colleagues[3] in this country all confirm the success of the earlier findings. Many medical men and women in the British Isles have recently had the welcome opportunity of listening to Dr. Philip Hench lecture on these remarkable drugs.[4] Workers at the Mayo Clinic have also contributed to a symposium[5] on cortisone and A.C.T.H. therapy. There is hope that in acute rheumatic fever patients will be protected by these drugs during the course of the disease so that damage to the heart is avoided, but it will be years before this can be proved. Disseminated lupus responds symptomatically,[6] and, though there is evidence that the disease is not arrested, long remissions have been reported after cessation of treatment. Periarteritis nodosa has responded well by reversal of pathological changes in some cases. Bronchial asthma and hay-fever have been relieved more successfully than by desensitizing injections or by the use of antihistamine drugs. In Addison's disease a relatively small dose of cortisone combined with D.C.A. has caused return of strength and the ability to withstand stress. There is some slight evidence that these hormones may prevent the serious protein loss which is such a problem in the treatment of severe burns, and we have recently published two interesting papers on this subject by Canadian workers.[7] Promising results have been obtained in certain diseases of the eye. According to the Mayo Clinic report the intra-ocular operation for the relief of glaucoma of each eye during the course of uveitis was successfully performed under a cortisone "umbrella." Previously the ophthalmic surgeons had not dared to operate on such cases, except in an acute emergency. Surgeons at the Ford Hospital at Detroit[8] have also reported good results in inflammatory eye diseases.

One of the main difficulties with cortisone and A.C.T.H. is maintenance therapy, and effective ways of economizing in these expensive and powerful drugs must be found. Evidently in some cases the gap between the smallest effective dose and overdose is a narrow one, and may indeed vary during the course of treatment. Much more research of the kind recently described in this *Journal* by Goslings and his colleagues[9] will be needed before the most suitable and economic method of administration is settled. It is not yet known whether it is better to prescribe a long period of treatment on the smallest dose which will keep the patient free from pain, or whether shorter courses with intervals between them are preferable. In order to form an opinion on these problems it is obviously necessary to keep suitable cases under treatment and observation for a long period. Though it will be difficult for hospitals to resist the temptation of trying to help a large number of their patients with these drugs, in the long run more will be learned by treating patients whose improvement can be permanently maintained, and this will also be the most humane method of using the drugs. The physician will gain little from observing a short remission which cannot be repeated for lack of supplies, and the effect on the patient is bound to be distressing. Already excellent studies on cortisone or A.C.T.H. have been reported from London,[3] Edinburgh,[10] and Manchester,[11] where with small supplies and grants from the Medical Research Council methods of assessment have been worked out. It is hoped that the experience of the clinicians who have done this work will be enlisted in the wider allocation now contemplated by the Ministry. The selected centres will have a chance to contribute essential information about the best use of these drugs. Failure to obtain this information will result not only in waste of dollars but in waste of opportunity.

[1] *Yorkshire Post*, November 23, 1950.
[2] Hench, P. S., Kendall, E. C., Slocumb, C. H., and Polley, H. F., *Arch. Intern. Med.*, 1950, **85**, 545.
[3] *British Medical Journal*, 1950, **2**, 849.
[4] Ibid., 1950, **2**, 942.
[5] *Proc. Mayo Clin.*, 1950, **25**, 17.
[6] Ferriman, D. G., and Wilsdon, R. B. N., *British Medical Journal*, 1950, **1**, 884.
[7] Crassweller, P. O., Farmer, A. W., and Franks, W. R., ibid., 1950, **2**, 242, 977.
[8] *Amer. J. Ophthal.*, 1950, **33**, 1033.
[9] *British Medical Journal*, 1950, **2**, 1019.
[10] Robson, H. N., and Duthie, J. J. R., ibid., 1950, **2**, 971.
[11] Janus, O., ibid., 1950, **2**, 1244.

MORTALITY FROM APPENDICITIS

When the Medical Research Council published a report on appendicitis by Young and Russell[1] in 1939 it was disturbing to find that the mortality had been increasing at ages under 5 and over 45, but since the case fatality rate recorded by many hospitals in different countries had shown a consistent decline during the same period it was considered reasonable to attribute the increase to a greater incidence of appendicitis. Moloney, Russell, and Wilson[2] have now brought our knowledge of the prevalence of appendicitis up to date with a review of the social factors suspected of playing a part in its aetiology, and of the

recent surgical experience at the Radcliffe Infirmary. According to their estimate 1 in 700 of the population may be expected to get acute appendicitis each year. They are unable to determine whether this represents a continued increase in prevalence or not, but it will at least serve as a basis for comparison in the future. Mortality, it is satisfactory to note, has been decreasing at all ages since 1930, but even in 1945–6 the death rate in patients under 5 and over 65 had not fallen below the level of 1920. Mortality fell during the second world war as in the first, but, unlike the earlier occasion, continued to fall afterwards. In the U.S.A. the deaths from appendicitis in 1948 were a quarter of the 1930 total.[3] The fall during the first world war and the subsequent rise which occurred in the mortality from diabetes, diseases of the gall-bladder, and appendicitis was attributed in this country to the changes in dietary habits induced by wartime conditions. If true, this provided important support for Rendle Short's view that the replacement of cellulose- and fibre-containing foods by meat and processed imported foods was a cause of appendicitis—a view which was also supported by the disproportionately high incidence of appendicitis in the wealthier classes. During the second world war mortality from all three diseases declined, but the decline continued afterwards and was still marked in 1948. The mortality from appendicitis in particular was in that year little more than a third of what it had been 10 years earlier. It must be supposed that even if dietary factors have contributed to a reduction in the disease improvements in therapy have been more important.

In analysing surgical experience Moloney, Russell, and Wilson have taken care to include in their series of cases admitted to the Radcliffe Infirmary in 1945–8 only those in which the diagnosis of acute appendicitis could be firmly substantiated. They were forced, therefore, to discard 499 of the 1,573 cases which had been labelled appendicitis in the hospital records. Many of these must have had a true appendicitis in the past and have come to operation in a quiescent period, but it must be considered whether the safety of appendicectomy has not to some extent hindered clinical judgment, with a consequent wastage of beds, money, and surgical time, quite apart from the inconvenience to the patient. It is to be hoped that these doubtful cases will be followed up and analysed in a further paper. The 1,074 cases which were accepted as being true examples of acute appendicitis have been classified according to Grey Turner's[4] method and the results compared with those reported by Grey Turner for the period up to 1934. In neither series were there any deaths in the group of patients with acute appendicitis without peritonitis, but in the group with diffuse peritonitis the mortality was reduced from 29% to 6%. This is reasonably attributed to the use of sulphonamides and penicillin, though the authors comment that both drugs were probably employed too seldom and in too small a dosage. With the free use of streptomycin or the newer antibiotics it may be supposed that the mortality will be reduced even further. The importance of early admission to hospital is well borne out by this series. Most of the patients (86%) were in hospital within 72 hours of the onset of symptoms. In 12 of the 15 fatal cases the delay in admission was more than 72 hours. General peritonitis was, however, already present in 5% of those cases which were admitted within 24 hours, so that a delay of even a few hours must still be considered dangerous. Sir Cecil Wakeley and Mr. P. Childs, whose report on a series of 217 cases of appendicitis appears in the opening pages of this issue, conclude that early diagnosis and early operation remain the most important factors in reducing mortality. They believe that few people need now die of peritonitis, and they do not see much, if any, need for the expectant treatment of localized peritonitis. Like the Oxford workers, Wakeley and Childs very seldom find it necessary to leave a drainage tube inside the peritoneal cavity, though there are surgeons who still believe in drainage.[3] A point of technical interest is that Moloney and his colleagues found that the use of nylon sutures reduced the incidence of wound sepsis.

[1] *Spec. Rep. Ser. med. Res. Coun. Lond.*, No. 233. London: H.M.S.O.
[2] *Brit. J. Surg.*, 1950, **38**, 52.
[3] Schullinger, R. N., *Surg. Clin. N. Amer.*, 1950, **30**, 495.
[4] *British Medical Journal*, 1938, **2**, 691.

STREPTOMYCIN IN GENITO-URINARY TUBERCULOSIS

Patients will have to be observed for many years before a final assessment can be made of the value of new drugs in the treatment of tuberculosis. The Veterans Administration in the U.S.A. is carrying out a long-term investigation into the effects of streptomycin in genito-urinary tuberculosis, and Lattimer, Amberson, and Braham[1] have recently reported the results of treatment of 253 cases followed up for two years. Repeated urine cultures for tubercle bacilli were done in every case, as well as cystoscopies, intravenous and retrograde pyelographies, and renal function tests. Three dose schedules were used. Of 64 patients who received 2 g. of streptomycin daily (in four-hourly doses of 0.3 g.) for 120 days, 83% ceased to pass tubercle bacilli in the urine immediately, while 68% remained free for six months. The corresponding figures for 42 patients who received 1 g. daily (in two doses of 0.5 g.) for 120 days were 60–75% and 46%. The third schedule—1 g. daily for 42 days—was found to be ineffective. As would be expected, the results varied according to the initial severity of the infection. The best results were obtained when there was no pyelographic abnormality, though the urine was T.B.-positive: eight out of ten cases remained negative for two years after beginning treatment, and the remaining two were "probably negative." When demonstrable lesions were present in the kidney the urine became T.B.-negative in only 25% of cases, though in others the progress of the disease was slowed. For large unilateral kidney lesions, and when there is complicating infection of the prostate and epididymis, the authors advocate surgery combined with a short course of streptomycin. Superficial ulceration of the bladder and ureter responded well to streptomycin, but no improvement was obtained in deep-seated lesions. Rinker[2] has reported that old tuberculous lesions of the ureter are apt to contract during treatment, with the formation of a stricture. Negative bacteriological reports may be misleading if this occlusion is not recognized. These results indicate the importance of early diagnosis. If the diagnosis is not made until caseating

[1] *Amer. Rev. Tuberc.*, 1950, **61**, 518.
[2] *J. Urol.*, 1950, **64**, 242.

or ulcerating lesions develop, results with streptomycin will be disappointing, and the bacilli are likely to become resistant to the antibiotic. Better results will probably be obtained by combining *para*-aminosalicylic acid with streptomycin.

PERSONALITY CHANGES AFTER HEAD INJURY

Personality changes associated with head injury were widely studied in this country during the war, with some valuable results. Thus the incidence of personality change in relation to the length of post-traumatic amnesia (and hence to presumptive severity of injury) was defined statistically by Symonds and Ritchie Russell.[1] Kremer[2] drew attention to the important part played by milder grades of personality change in the aetiology of post-traumatic neurosis. Paterson,[3 4] whose studies in this field remain models of their kind, laid stress on the fact that exaggerations of previous temperamental traits are common after head injury, and in severe cases may give rise to a virtual caricature of the original personality. Much work, too, was done on the study and assessment of post-traumatic intellectual defects. Although psychometric methods found their place in such work, all responsible investigators were agreed that the results of mental tests are to be assessed with caution. Further, the relation of intellectual defects to changes in the sphere of personality remains not a little obscure.

In two recent papers Pflugfelder[5] reports detailed studies of 12 cases of severe contusional head injury, and his findings are fully consistent with British wartime experience. He has analysed in some detail the lasting post-traumatic personality changes found in 10 of the patients. The change in four of them was in the direction of expansiveness and lowered self-control, whereas in five it was in the opposite direction of apathy. These changes could be regarded, with some justice, as exaggerations of previous personality traits, thus supporting Paterson's generalization. Intellectual disturbances were present in all cases and were investigated with special care. Although making much use of psychological test methods, Pflugfelder was careful to employ them in a flexible manner and to adapt them where necessary to the specific pattern of disability shown by the individual patient. This approach should be well noted by the clinical psychologist, who has shown himself hitherto only too prone to substitute statistical sophistication for clinical acumen. The precise pattern of post-traumatic intellectual defect exhibited by Pflugfelder's cases varied from patient to patient. In some cases at least these individual differences could be correlated with differences in size and extent of the principal cortical lesions. Although fairly marked defects were shown by all on mental tests, it is interesting that only in six was practical judgment said to be affected. It is also worthy of note that Pflugfelder's follow-up studies strongly suggest that the severity of permanent post-traumatic intellectual loss can be assessed with some accuracy on neuropsychiatric examination six to twelve months after injury. From a practical no less than a scientific standpoint Pflugfelder's careful study deserves close scrutiny.

[1] *Lancet*, 1943, **1**, 7.
[2] *Proc. R. Soc. Med.*, 1944, **37**, 564.
[3] *Lancet*, 1942, **2**, 717.
[4] *Proc. R. Soc. Med.*, 1944, **37**, 557.
[5] *Mschr. Psychiat. Neurol.*, 1949, **118**, 288, 379.

LUNG ABSCESS AS A COMPLICATION OF E.C.T.

Psychiatrists who are familiar with the use of electro-convulsive therapy would probably rank the incidence of lung abscess fairly low among the complications of this treatment, certainly much less than 1%. The occurrence, therefore, of 25 cases of lung abscess in eight years at one hospital in the U.S.A. among 2,562 patients given E.C.T. deserves attention, particularly since the authors of the report[1] state that the five deaths due to lung abscess constituted well over half the total deaths associated with E.C.T. during this period. In the hospital population as a whole lung abscesses occurred less commonly than among the patients treated by E.C.T. The complication was diagnosed in each case during or shortly after treatment. Lung abscess may, of course, not be recognized as a complication at all if its onset is insidious and the signs become apparent months after the completion of electro-convulsive therapy. Such factors as the position of the patient, the type of mouth gag, or tube feeding could not be related to the occurrence of lung abscess. Nevertheless the authors point out that seven of the patients who developed this complication were being tube-fed as well as having E.C.T., and in the same eight-year period seven tube-fed patients among those not receiving E.C.T. also developed lung abscess. The age of the patient and the severity of the mental disturbance did appear to be related to the incidence of this complication. In 60% of the cases the patients were over 40 years of age, and at least 23 of the 25 patients were severely disturbed. It is a fact that acutely disturbed patients, who are difficult to examine and treat, often have filthy mouths and infected nasal cavities. According to Brock,[2] 40 to 80% of the patients developing lung abscesses in general hospitals have dental abscesses or infections, and he cites evidence that iodized oil injected into the nose while a person is asleep will be aspirated into the lungs, particularly into the right upper lobe. Thirteen of the 25 abscesses among the patients receiving E.C.T. were in the right upper or middle lobe; five in the left lower lobe; four in the left upper lobe; while the site of three could not be determined from the records.

To prevent this complication sedation or light anaesthesia may be necessary before examining the oral and nasal passages in patients with severe psychoses who are to be treated by E.C.T. It is possible that curare may reduce the risk of lung abscess by modifying the vigour of the first inhalations taken by some patients after the apnoea of the fit. The prophylactic use of penicillin in debilitated patients should be considered or in any patient in whom resistance to infection might be lowered. The authors of the American report, besides emphasizing the importance of dental hygiene, suggest the use of atropine to reduce salivation and of suction if secretion is excessive. They advise daily temperature recording while the patient is under treatment, and *x*-ray examination at the first sign of respiratory symptoms after E.C.T. has stopped. Some will see in the possibility of this complication an additional reason for reserving out-patient electro-convulsive therapy for younger, physically fit patients.

[1] Kwalwasser, S., Monroe, R. R., and Neander, J. F., *Amer. J. Psychiat.*, 1950, **106**, 750.
[2] *The Anatomy of the Bronchial Tree.* New York: Oxford University Press. 1946.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

THE MANAGEMENT OF THYROTOXICOSIS

BY

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The diagnosis of thyrotoxicosis and the division of the disorder into its component syndromes lie outside the scope of this paper. Nevertheless, a few introductory words on these subjects are necessary if misunderstanding of what follows is to be avoided.

Pathological Types

It has been customary in the past to lay some stress on the consistence of the thyroid gland, and especially on the presence or absence of nodules. There is little doubt that nodularity is of great pathological significance and academic interest, but until it has been subjected to far more study it is wise to avoid exaggeration of its clinical significance. It should be remembered that almost all diffusely enlarged glands become nodular with the passage of the years. Moreover, it is a common experience that glands considered to be diffusely enlarged before and even during operation are found under the microscope to be in fact nodular. It is therefore justifiable to attach significance to the presence of nodules, but not to their absence.

It is also unwise to be influenced too greatly by the size of the gland, unless severe pressure symptoms occur. Severe thyrotoxicosis may exist in patients whose thyroid glands are impalpable either because of their position or the shape of the neck or because they are in fact not enlarged.

Symptomatology

The sufferer from classical Graves's disease is easy to recognize. He complains of sweating, anxiety, irritability, palpitations of the heart, breathlessness on exertion, excessive activity followed by undue fatigue, loss of weight, and intolerance of warmth, and shows the signs of thyroid enlargement, exophthalmos, upper-lid retraction, vasodilatation, tremor, and tachycardia. Many patients present few of these symptoms and signs, and all too often are stigmatized as malingerers or hysterics, experiencing years of avoidable invalidism. Most often unrecognized are those in whom the brunt of the disease falls upon the heart, in whom no evidence of thyrotoxicosis may be found except tachycardia, fibrillation, and even congestive heart failure, and in whose thyroid glands may be found a nodule too small or too deeply placed to have been obvious even to the patient. There is no more satisfying experience in medicine than the discovery, treatment, and actual cure of patients such as these.

It is important to remember that even when the disorder is fully developed all the symptoms and signs may not be due to thyrotoxicosis. In foretelling the results of treatment, knowledge of the patient's physique and personality before the onset of the disease is of great importance. In many instances thyrotoxicosis attacks the constitutionally inadequate. Indeed, many of us believe that it is sometimes the result of the impact of shocks and strains upon patients ill formed by nature to bear them. In such circumstances we cannot expect to make a silk purse out of a sow's ear. In a few patients the anxiety state or other original inadequacy may remain, expressing itself perhaps by an autonomic or psychological imbalance which both patient and doctor had assumed to be part of the thyrotoxic state. Nevertheless, even these patients are better able after treatment to cope with the difficulties of their lives.

Factors Bearing on Management

Before any definite conclusions can be reached about the ideal management of a case of thyrotoxicosis the disease must be considered historically. The heredity of the patient (for thyrotoxicosis is often familial), his environment before the disease developed (for this may be alterable), the immediate predisposing causes (which may never be repeated), and the nature of the disease itself must be examined.

From the practical point of view a family history of thyroid disease is important because it suggests that the thyroid once having "gone wrong" is likely to go wrong again, should similar circumstances arise. It is one point in favour of the partial removal of the offending organ. The previous environment is important, because careful inquiry may elicit the reasons for the thyroid gland's persistent overactivity—the earlier straws which weakened the camel's back. Such straws may be avoidable, or they may be unavoidable and therefore a continuing risk. The immediate predisposing causes—the last straws which broke the camel's back—are often obvious. Among these are puberty, childbirth, the menopause, severe infection, psychological shock, and the unwise administration of thyroid in the treatment of obesity. Often these are causes against which the patient can be protected, but unfortunately they are frequently interchangeable, and in avoiding one the patient may encounter another. Any last straw will do. Indeed, however successful may be our treatment for the time being, the thyrotoxic patient remains at risk while he retains his thyroid gland, for ever watching the wind to see which way the last straws are blowing. There is much to be said for the dictum of Mr. Charles Donald. At a meeting at the Royal Society of Medicine he criticized the medical treatment of thyrotoxicosis with its claim for remissions lasting several years, and stated his belief that all patients so treated would eventually relapse. Certainly at the New End Thyroid Clinic we have seen scores of middle-aged patients with a typical exacerbation or—a still more serious event—with auricular fibrillation, and sometimes with cardiac failure, who had had thyrotoxicosis in their youth.

Medical Treatment

Despite this proviso, we are still justified in considering the desirability of medical treatment in the individual case, and our justification is likely to remain until we have had an opportunity of examining the after-history of "successfully treated" patients for half a century. Even before the introduction six years ago of the thiouracil derivatives, there were patients who recovered without operation, and some of these have not so far relapsed. My own experience in those days was slight, but it was large enough to leave an impression on my mind clear enough for comparison

with those of older physicians, many of whom formed, with better reason, a similar opinion. In the days when surgery was very risky, physicians often attempted to treat their less severely ill patients by means which are still an essential part of the medical treatment of thyrotoxicosis; means, I would add, which are often unjustifiably neglected by those who are content with the straight choice between thiouracil and thyroidectomy. They attempted to secure for their patients the maximum of physical and mental rest by confinement to bed, sedation, advice on the replanning of their lives, and simple psychotherapy.

My earlier memories suggest that those who responded by a prolonged remission were usually young women with mild thyrotoxicosis and small, diffusely enlarged, or impalpable thyroid glands, with no family history of thyroid disorder, and with an apparently obvious "last straw" from the weight of which they could be easily relieved. My experience in the last six years suggests that this type of patient may have a prolonged remission after treatment with thiouracil derivatives, but whether this remission will prove permanent only time will show. Even when patients are carefully selected and treatment is continued, as it should be, for at least a year, relapse within a year, and usually within six months, is common. Those who relapse can be treated again by the same means, with equally satisfactory results, but, again, relapse is common. In a disorder characterized by undue anxiety it seems unjustifiable thus to play cat-and-mouse with the patient, and it is better to recommend thyroidectomy when the first relapse occurs.

When treatment with thiouracil is chosen, all those general measures which were a part of the older medical treatment should be instituted, though rest in bed is no longer necessary, except in the severest cases. In this country the methyl derivative of thiouracil is generally used, in the United States of America the propyl derivative. The latter is said to be less toxic, but, as serious toxic symptoms are rare with either, more prolonged controlled observations will be needed before a final conclusion can be reached. Methyl thiouracil, 200 mg., is given morning and evening until all signs of thyrotoxicosis have been controlled. During this initial period of a few weeks no reduction can be expected in either the size of the thyroid or the degree of exophthalmos, both of which may indeed be slightly increased. The dose is then gradually reduced to 50 mg. daily, at which level it is kept for at least a year.

Complications of Thiouracil Treatment

It was formerly the custom to perform frequent white cell counts during treatment with thiouracil, as once it was during the administration of the sulphonamide group of drugs. This is now considered neither necessary nor helpful. The dreaded complication of agranulocytosis is very rare, occurring with the modern derivatives of thiouracil and with the small doses now employed in less than 2% of cases. Moreover, agranulocytosis does not usually develop gradually, but strikes suddenly. In one example it occurred only two days after a white cell count of 10,000 had been recorded. Instead of frequent examinations of the blood, a warning is issued to the patient that in the event of his throat becoming sore he should take no more of the drug and report immediately to hospital. Should the white cells then be found to be greatly reduced he is immediately admitted, and massive doses of penicillin and blood transfusions are given.

Other complications of treatment are less serious and rarely enforce discontinuance of the treatment. They include a variety of rashes, such as purpura and urticaria, swelling of the joints, nausea, drug fever, and enlargement of the lymphatic glands. The rashes usually respond to the antihistamine drugs such as promethazine hydrochloride ("phenergan"). The frequency of these complications in two series of 200 patients are as follows:

	Edinburgh*	New End
Agranulocytosis	4	2
Leucopenia	2	2
Purpura	1	0
Urticaria	Not stated	7
Fever and vomiting	5	0
Conjunctivitis	5	2

*Reported by Professor Derek Dunlop.

A different class of complication occurs which should be regarded as evidence of overdosage. It includes obvious increase in the size of the gland or in the degree of exophthalmos, and the appearance of oedema and myxoedema. If these occur treatment should be stopped until the undesirable effects have passed off, when it should be continued in smaller doses.

Contraindications to treatment with methyl thiouracil are the presence of large goitres, causing pressure symptoms, and of retrosternal goitres. In the opinion of the team working at the New End Thyroid Clinic, obvious nodularity is also a contraindication. In our experience, though the signs and symptoms of hyperthyroidism are in such cases easily controlled, relapse invariably occurs. The intelligence of the patient and his willingness to co-operate must be considered seriously, and the slightest deviation from the rules laid down for his safety is an indication for thyroidectomy. – But perhaps the most serious contraindication to medical treatment is the fact that it imposes on a patient, already as a rule unduly anxious, a period of prolonged reliance on his doctor, which cannot fail to exaggerate any hypochondriacal traits which may be already present.

Surgical Treatment

The indications for surgical treatment are implicit in what has already been written. After a preliminary enthusiasm for medical treatment on my part, the members of the team at the New End Thyroid Clinic, which has the advantage of treating over 300 patients suffering from thyrotoxicosis per annum, are of the opinion that in most cases thyroidectomy after proper preparation is the ideal method of treatment. In skilled hands (a point referred to below) the risks by either method are too small for comparison. The results of surgery are more certainly and more rapidly achieved. The economic position of the patient is better protected by a method which in most cases rids him within two months of the necessity for further treatment. The cosmetic results, except for the inevitable risk of keloid scars (a risk we shall shortly be able to eliminate), are unexceptionable. Within a month or two the scar in most cases is invisible, or almost invisible, at a normal conversational distance.

The statement that the risks by either method are equal and negligible requires qualification. It implies in the first place a close and friendly collaboration between physician and surgeon, and in the second place a surgical technique of the first order. Even to-day the risk of surgery to the life of the patient and to the integrity of his recurrent laryngeal nerves and of his parathyroid glands is by no means negligible in the hands of one who has been called by Linnell "the occasional thyroid surgeon," however competent he may be to perform the other operations of surgery. In certain areas the general practitioner, dealing with a patient suffering from gastric ulceration, for whom he feels that a partial gastrectomy is the operation of

choice, may decide for similar reasons that his patient had best be dealt with by a gastro-jejunostomy or even by purely medical treatment. I have been forced to make such a choice in circumstances in which the gastric operation would perforce be performed by myself. It is impossible to discuss a question like this except on the assumption that both medical and surgical treatment will be of the highest order.

When, with this assumption granted, it has been decided that the treatment of choice is thyroidectomy, the preparation for operation, important though it may be, is straightforward. Admission to hospital is no longer necessary until a day or two before operation. Patients suffering from mild symptoms and signs of thyrotoxicosis can safely be prepared by means of iodine alone. Lugol's solution in the unnecessarily large dose of 5 minims (0.3 ml.) three times a day is usually given for a period of two to three weeks. The patient is then admitted to hospital and the operation performed almost immediately.

When, however, the degree of toxicity is moderate or severe, it should first be controlled by means of methyl thiouracil. The thiouracil derivatives have the disadvantage of rendering the operation of thyroidectomy more difficult in the occasional case. This disadvantage—a small one in comparison with the enhancement of safety which accompanies it—can usually be overcome by the administration of iodine for two to three weeks before operation. Some physicians prefer to combine the iodine in the pre-operative period with methyl thiouracil; some (as at New End) forgo the thiouracil for the final period and use iodine alone; others overlap the two drugs for various periods, giving at first methyl thiouracil alone, then a combination of methyl thiouracil with iodine, and, finally, iodine alone. Others administer thyroid as well. So far it seems that no advantage is attached to any one of these methods. All are excellent in their results, and it will be many years before any valid comparison can be made between them. Whichever method is adopted, the patient is usually out of bed in four or five days and out of hospital in from nine to twelve days.

There seem to be few contraindications to operation. Certainly auricular fibrillation is not one of them. In from 60 to 80% of cases the fibrillation ceases, almost always in paroxysmal fibrillation, as a result of thyroidectomy alone or of thyroidectomy followed by a short course of quinidine. Even congestive heart failure is no contraindication, though it may call for a longer pre-operative period, perhaps in hospital. The operative death rate in skilled hands is under 1%, the incidence of other complications is negligible, recurrence is of the greatest rarity, and a return to normal life and work almost invariable.

The use of radioactive iodine may well be the method of the future, but no useful purpose would be served in discussing it here. Even in centres in which it is available it is still in the experimental stage. It is not generally available in Great Britain. When it is, it will be beyond the scope of the general practitioner because of the special knowledge and equipment which it requires.

In no other disorder is the judgment of the general practitioner, with his knowledge of the background, character, and economic situation of his patient, of greater value than in thyrotoxicosis. It should be largely his responsibility to decide upon the best method of treatment. On the assumption that an expert thyroid surgeon is at his disposal, he will probably decide on thyroidectomy, after adequate medical preparation, as the best treatment for most of his patients.

A DIFFERENT VIEW OF THE TUBERCULOSIS PROBLEM

BY

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Nearly all those who have written in the lay or medical papers about the tuberculosis problem, as it exists to-day, have emphasized the need for more institutional beds and for more nurses to staff them. While everyone will agree that there is a shortage of beds and staff, and that there are long lists of sick and often infectious persons waiting for admission, it must not be forgotten that the provision of hospital and sanatorium accommodation is but one aspect of the matter in considering any truly comprehensive scheme for the prevention and treatment of tuberculosis.

A few contributors have mentioned what may be called the other end, or perhaps the beginning, of the problem. They have written of the housing situation and particularly of overcrowding. While agreeing with them, most of us on reflection would like to extend the idea to improving the whole environment of the people, whether in the home, school, office, shop, or factory. Many of the early triumphs of preventive medicine were won on the environment front, and there is still plenty to be done there.

Let it be agreed, then, that at one end of the situation we want more functioning beds and at the other end better environmental conditions, especially housing, not overlooking such matters as milk-borne infection.

Sir Robert Philip's Scheme

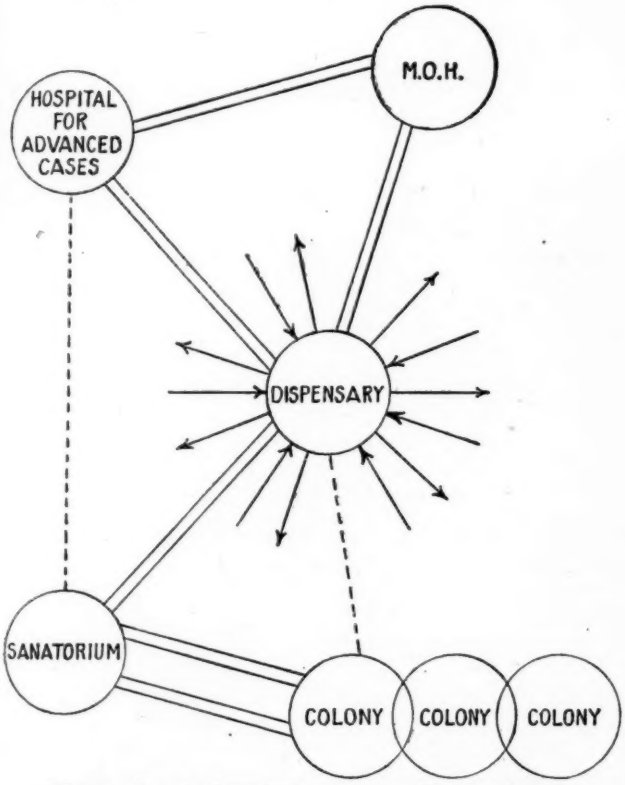
What is lacking is uniform and purposive control. That kind of control can be produced and maintained only by restoring the tuberculosis dispensary to its proper position in each clinical area as the directional centre of what the late Sir Robert Philip called many years ago a co-ordinated tuberculosis scheme.

It is to be doubted if many of the younger men and women practising medicine to-day, even those working in the tuberculosis field, have any clear conception of what the tuberculosis dispensary should be and should do. It is certain that many members of local health authorities, hospital management committees, and regional hospital boards have only the vaguest ideas about the whole matter, and yet they are the bodies that are supposed to be directing policy. Up to the appointed day there were areas with excellent schemes, and there are still some; but they were never numerous, and many more local authority units were content with poor or indifferent arrangements. In these latter it will be found that the dispensary has become an isolated and degraded out-patient department, falling very far short of the kind of dispensary conceived in Philip's mind as long ago as 1887.

Below is shown how Philip defined the tuberculosis dispensary, and I am able to reproduce from my tuberculosis scrapbook the diagram which accompanied the description. Both pamphlet and diagram were given out to his classes in the University of Edinburgh after the foundation of the chair of tuberculosis.

Under the heading "Co-ordinated Tuberculosis Scheme —Edinburgh Pattern" the tuberculosis dispensary is described as "an institution for the detection of tuberculosis, and for the treatment and guidance of persons and households suffering therefrom. It is a 'reception house' and 'clearing house,' and a centre of information regarding

the prevention and care of tuberculosis." The functions of the sanatorium, the hospital, the colony, the open-air school, the tuberculosis care committee, etc., are then defined. If the diagram is examined it will be seen that the dispensary is the centre of the scheme—in fact, the sun of the tuberculosis solar system. Particular attention should be paid to the arrows pointing into and out of the dispensary. The former represent information, patients, suspects, and contacts coming into the dispensary, and the latter active search by the dispensary staff, including the physicians, for tuberculosis in the population generally by all possible means, together with domiciliary supervision, aftercare arrangements, and preventive measures.



Scheme of anti-tuberculosis measures: Edinburgh plan.

To-day I think we should be content to mark the circle entitled "Hospital for advanced cases" just "Hospital," and probably we should agree to replace the three interlocking circles marked "Colony" by some expression representing organized arrangements under the Ministry of Labour and the Assistance Board, together with voluntary bodies dealing with reablement, in addition to the actual colonies. With these trifling amendments the diagram presents the main idea to-day as well as it did when first drawn.

The Official Outlook

One of the important functions of a dispensary (now called chest clinic, in spite of the fact that tuberculosis affects other systems besides the respiratory) is the selection of cases for treatment. If this is done properly there should be some fairly substantial saving in institutional patient-days.

A recent Ministry of Health circular (RHB (50) 64) addressed to regional hospital boards makes the following statement.

"*Chest Clinics.*—Attention should be given to ways in which chest clinics can help to relieve pressure on institutional beds. A high standard of clinical judgment is necessary to avoid recommendation of treatment for cases in which it is not essential and for which domiciliary care would suffice."

The circular goes on to emphasize the importance of avoiding the use of special treatment "when consequential complications may only protract the stay in the institution." It would be interesting to know how far institutional beds are occupied by and blocked by unfortunate patients who are the victims of ill-considered special therapy. It must be common knowledge that the readily acquired techniques of collapse therapy in its various forms have not always been accompanied by the judgment and wisdom which physicians (and surgeons) are expected to show.

The paragraph ends with a laudable exhortation to chest physicians not to neglect their duties in the spheres of prevention and aftercare. It runs, "Chest physicians will recognize that it is important to concern themselves *no less* with prevention and aftercare than with their clinical work; and that it is necessary to give *sedulous attention* to case-finding and the supervision of the tuberculous family, *including visitation in the home.*" The italics are mine. A chest physician who runs a dispensary as a second-rate and isolated out-patient department is clearly not doing these things, even if some semblance of the work is carried out by clinic nurses.

Speaking at a meeting of the Tuberculosis Society on January 21, 1918, Sir Robert Philip is reported (*British Medical Journal*, 1918, **1**, 150) as saying: "Many cases of tuberculosis do not require residential treatment. Skilled surveillance at home or at the tuberculosis dispensary was sufficient." He goes on to define the cases likely to benefit from hospital and sanatorium treatment, including the rather special type of case suitable for colony treatment rather than prolonged "unnecessary and uneconomic" residence in a sanatorium.

Although 28 years separate these two quotations from authoritative sources, there runs through them the same emphasis on careful and skilful selection at the dispensary, chest clinic, or whatever we choose to call it. Once again it is from this central point, and this point only, that a properly co-ordinated scheme for the prevention and treatment of tuberculosis can be directed. To the layman and to many members of the medical profession a diagnosis of tuberculosis means automatic admission to the waiting-list for residential treatment. In fact, if this is not done, patients, their relatives, and the family doctor are apt sometimes to become resentful and distrustful. It is not surprising that local authority and hospital management committees think only in terms of institutional beds whenever tuberculosis is mentioned. It is someone's job to teach these bodies to revise their ideas and review the matter as a whole.

Unified Control

Two things follow. The tuberculosis dispensary must be restored to its proper position as the centre controlling a properly planned scheme in each area, and the direction must be under a medical officer of consultant status with real administrative ability. As has been stated already, there are still good and well-run schemes in Britain, but a large number of the men and women in charge of dispensaries lack administrative sense and good clinical judgment founded on mature experience. They need guidance, and, while capable of making a useful contribution, should not be left to drift along as many are doing at present. If this is not done, the exhortation quoted from the Ministry's circular can never bear fruit.

Finally, we arrive at the difficulty of dual control—in fact, King Charles's head again. The tuberculosis physician, as

I prefer to call him, is usually an officer of the regional hospital board. So long as he is working at diagnosis and treatment he is doing the board's work. When he is working at prevention, care, and aftercare he is doing duty for the local health authority under section 28 of the National Health Service Act, 1946. This matter was debated with much eloquence and enthusiasm at the Commonwealth and Empire Congress of the National Association for the Prevention of Tuberculosis in July, 1949. No definite decision was reached, but at the end of the meeting the impression remained that those with real knowledge of and deep sympathy with tuberculosis work strongly deprecated this dichotomy, and, moreover, foresaw that it would lead to disaster.

It will in the end have to be admitted even by the most obstinate administrative Civil Servant that the present arrangement, if such a term is admissible, or, to be frank, the present muddle, cannot be permitted to continue. There may be a difference of opinion concerning what body shall control the dispensary, but there surely must be agreement that we cannot continue to have two people at the ship's wheel, each wanting to go his own way, or possibly not caring which way he goes. No amount of talk about co-operation, co-ordination, and liaison—those sugary placebos of the Civil Service—can solve this problem. Above all, do not let us have any more joint committees. The works of the entire Health Service are cluttered up with committees.

Control must be in the hands of the regional hospital boards *or* the local health authorities, unless someone is rash enough to invent a new body altogether, which heaven forbid !

Many will feel that the local health authorities, as county councils and county borough councils, have had their chance, and on the whole have not done the job very well. Moreover, a dispensary (cannot we drop the misleading expression " chest clinic " ?) must be attached to a hospital administratively if not physically. This being the case, let the regional hospital boards take control and come to terms with the local health authorities as best they may. This might need new legislation. It would certainly mean revision by the Ministry of paragraph 37 of Circular 118/47, which laid certain duties upon local health authorities.

Conclusion

Section 1(1) of the National Health Service Act, 1946, defines the duty of the Minister. " It shall be the duty of the Minister of Health to promote the establishment in England and Wales of a comprehensive health service . . . and for that purpose to secure the effective provision of services." The tuberculosis service is neither comprehensive nor effective, nor can it be so long as the present imperfect machinery is employed.

To sum up: (1) The tuberculosis dispensary must be restored to its proper position and function in each clinical area. (2) It must be adequately staffed and under the general direction of an officer of consultant status. (3) There must be unified control, preferably by the appropriate regional hospital board.

In his annual report for 1949 to the Kent County Council, Dr. A. Elliott, county medical officer, states that according to his estimate some 180 health centres would eventually be required in the county, but that the realization of such a programme at a possible capital cost of £18m. lies so far in the future as to make no real contribution to the work of the executive council.

TUBERCULOSIS AND THE NATIONAL HEALTH SERVICE

REPORT OF B.M.A. GROUP COMMITTEE

" The inadequacy of the present provision for the diagnosis, treatment, and aftercare of tuberculosis in this country is a national scandal which can no longer be viewed with complacency." So starts the comprehensive report prepared by the Tuberculosis and Diseases of the Chest Group Committee, which was recently approved unanimously by the Council of the British Medical Association. The Group Committee of 12 members, under the chairmanship of Dr. Peter Edwards, includes several medical superintendents of sanatoria and chest physicians in large centres, a thoracic surgeon, and a county medical officer of health.

The report, in discussing the problem of tuberculosis in relation to the National Health Service, draws attention to the 11,000 tuberculous patients awaiting admission to the 23,000 beds provided for the treatment of this disease. The development of a comprehensive plan is the more difficult because of the absence of any official figures on the optimum number of beds, nurses, and doctors, but the report outlines a policy and makes recommendations on the organization of the service, on the staffing of chest clinics and sanatoria, and on measures for the prevention of tuberculosis and the welfare of tuberculous patients.

The Problem Stated

Little detailed consideration is given to the tuberculosis service in the National Health Service Act, but certain general advice on the subject has been given to regional hospital boards by the Ministry of Health, and it is clearly intended that existing tuberculosis organizations are to be expanded into a branch of medicine dealing with all diseases of the chest. It is considered by the Group Committee, however, that tuberculosis will continue to be the main problem in the field of chest diseases for many years to come. In the past, as a problem of public health, it has been too much segregated from general hospital services. Many tuberculosis dispensaries have no *x*-ray equipment and no access to the basic services of a general hospital, and are inadequately used. The chest clinic, which will displace the tuberculosis dispensary, will be the centre from which the attack on tuberculosis is organized, but it must be linked to the general hospital, and it must also have the opportunity of applying to all forms of chest disease the principles of social medicine.

The prevention of tuberculosis and the social welfare and aftercare of the tuberculous patient and his family are the responsibility of local authorities under Section 28 of the Act, but they are inseparable from the clinical work of the chest physician, who must maintain the closest liaison with the medical officer of health, to whom he should act as consultant.

Organization of Clinics for Diseases of the Chest

Four principles are laid down for the development of future clinics for diseases of the chest :

(1) The provision of a complete service comprising all aspects of chest and tuberculosis work.

(2) Association wherever possible with general hospitals; occasionally such clinics may be sited within sanatoria, particularly in rural areas.

(3) Provision of an efficient follow-up service and maintenance of close liaison with local general practitioners.

(4) Provision for the education of medical students, practitioners, nurses, and social workers at suitable centres.

A large full-time clinic for chest diseases established in a general hospital will require its own permanent and specially trained auxiliary staff. In the smaller hospitals a part-time clinic, if adequately housed and equipped, may serve to upgrade the hospital and allow it to provide other specialist services previously available only at a larger hospital at a distance.

It is considered that each hospital region should be subdivided into smaller areas served by appropriately placed clinics. The

optimum population served by a clinic would probably be about 200,000 in an urban area and less than this in a rural area. In compact urban areas with good public transport it would be better to have a single well-equipped clinic than a large number of minor centres. It is acknowledged that in rural areas the development of comprehensive clinics for chest diseases may be difficult, especially if there are no general or cottage hospitals. A system of mobile clinics as suggested in the *British Journal of Tuberculosis* (1949, **43**, 36) may be advisable in some areas.

The X-ray Equipment of a Clinic for Chest Diseases

It is estimated that at a clinic serving a population of 200,000 it may be necessary to take 5,000 radiographs a year. This would call for an *x*-ray department within the clinic to deal with chest work only. A rotating anode tube, with a generator capable of producing 200–400 milliamperes at 90–95 kVp, and with provision for tomography, is regarded as essential if the necessary quality and comparability of chest radiographs are to be maintained.

In each consulting- and treatment-room in the clinic there should be equipment for chest fluoroscopy distinct from the main *x*-ray plant and available for the personal use of the chest physician. Small clinics holding only two or three sessions a week may use the general *x*-ray department of the hospital, but it is emphasized that the same high standard of technique and equipment must obtain. In a general hospital these *x*-ray facilities will be the ultimate responsibility of the hospital's radiologist.

A working arrangement between the hospital radiologist and the chest physician to cover such matters as control of quality, reporting on serial radiographs, filing and record-keeping, and appointments for *x*-ray examination will be necessary. In general it is felt that the volume of chest radiography is such that the radiologist should be willing to leave routine reporting to the chest physician, but frequent and mutual consultation upon abnormal findings and other matters of interest is essential.

The provision of a comprehensive dental service in the hospital for all patients attending the clinic for diseases of the chest is also recommended.

Health Visitors and Almoners

In the struggle against a disease in which home conditions count for so much, for both the patient and the other members of his household, the health visitor is a key person. The Committee recommends the appointment of full-time specially trained tuberculosis visitors in urban areas, and wherever possible in rural areas, and that the medical officer of health should delegate the supervision of the work of these visitors to the physician for chest diseases. In the large whole-time clinics something is to be said for the employment of a proportion of clinic nurses who will be engaged solely in out-patient work. In part-time clinics the tuberculosis visitor should always attend the clinic at the same time as the physician and should act as clinic nurse. A system whereby the tuberculosis visitor would divide her time between domiciliary and clinic work is favoured.

It is realized that the work of the health visitor may overlap to some extent that of the almoner; nevertheless, a fully qualified almoner—or, if this is not possible, a trained social worker—is considered an essential part of every large clinic. The general hospital almoner may find it possible to cover this duty in the case of a part-time clinic. So far as possible the same almoner should work in both the chest clinic and the sanatorium, because the social problems of the patient are the same in both. Domiciliary visiting should normally be done by the tuberculosis visitor, not by the almoner. Domiciliary treatment is increasing, and the help of general practitioners may be required if chemotherapeutic and antibiotic drugs have to be administered. The home nursing service may also be called on to provide assistance.

Clerical staff is another necessity in a clinic for chest diseases, to save both the physician and the nurse from much routine labour. A system of reporting to general practitioners is regarded as essential.

Hospital Accommodation

The minimum number of beds needed for the treatment of pulmonary tuberculosis is estimated at one bed for each thousand of the population. At present only about half this number of beds are available. A sanatorium of less than 200 beds is not an economic unit if, as is desirable, every sanatorium is to have *x*-ray equipment of the same standard as that for clinics for chest diseases, adequate laboratories, and the services of consultants and specialists. Diversional and occupational therapy should be designed at the hospitals to effect a process of rehabilitation continuous with and preceding that provided through the clinic.

While the present acute shortage of beds continues it is agreed that some central control of admissions may be necessary, but reference should always be made to the clinic physicians in the area. It is thought that cases of non-respiratory tuberculosis should be treated in appropriate special hospitals, all of which should be regularly visited by a consultant chest physician. A special problem is presented by patients who require treatment for combined respiratory and non-respiratory tuberculosis. In each region at least one central sanatorium block should be provided for such cases. Cases of active respiratory tuberculosis requiring short-stay investigation or treatment for non-respiratory conditions, such as urogenital tuberculosis, should, however, be admitted to general hospitals under the care of the appropriate specialist.

Staff Structure

The Committee next turns to the question of staff. It points out that at present many chest-disease physicians work exclusively either in clinics or in sanatoria. In some cases the clinic physician also acts as medical superintendent of a small sanatorium; in others the medical superintendent of a large sanatorium acts as consultant for the surrounding district. A satisfactory relation between the clinic physician and the sanatorium physician is not always easy to achieve. Probably there is no single solution, and local conditions will often determine the pattern irrespective of any ideal arrangement.

The following recommendations are made:

(1) In the larger sanatoria the sanatorium physician should accept final responsibility for the course of treatment given to any patient in the sanatorium. The programme of treatment for each patient should clearly be decided by mutual consultation between the sanatorium physician and the clinic physician, who should visit the sanatorium regularly.

(2) Regular consultative sessions between sanatorium physicians, physicians concerned with clinic work, and other interested persons (especially thoracic surgeons) should become routine practice both in clinics and in sanatoria.

(3) Small institutions situated within or close to the areas they serve would usually be staffed jointly or work in collaboration with clinics in their areas.

A few remarks are added about co-ordination with other specialties. The development of clinics for chest diseases within general hospitals should assist collaboration between the chest-disease physician and his other specialist colleagues, so that the facilities of other departments would be available to the clinic. Thoracic surgical units which are concerned with both tuberculous and non-tuberculous cases should be established according to geographical needs. The relationship between the physician and the thoracic surgeon should be particularly close. It is suggested also that in addition to any wards allocated for the treatment of tuberculosis each physician should control a number of beds in the general hospital, where diagnosis and assessment could be undertaken, these beds to be associated, wherever possible, with the thoracic surgery unit.

A chest clinic serving, as recommended, a population of 200,000 would need an establishment of one consultant, two assistant physicians, and an appropriate staff of registrar grade. The lay staff would comprise one almoner, five health visitors and clinic nurses, and five clerks. With regard to the intermediate grade of assistant physician for chest diseases—a grade between senior registrar and consultant—it is considered that there is a place in the service for such officers, provided they are recruited solely from the ranks of registrars. This grade

should comprise only practitioners in senior posts acting as assistants to consultants, but not normally trusted with full responsibility.

In sanatoria it is recommended that there should be, on an average, one medical officer to fifty patients. Establishments with fewer than 100 beds should be run by clinic physicians; those between 100 and 150 should have one consultant, one assistant physician, and one medical officer; those between 150 and 200, two consultants, one assistant physician, and two medical officers, and those between 200 and 300, two consultants, two assistant physicians, one senior registrar, and two medical officers. It is added that the staff, especially in sanatoria, may have to be increased during the summer to allow for holidays, and that when locumtenents have to be employed the possibilities for rehabilitation of doctors who themselves have had tuberculosis should be borne in mind.

Mass Radiography

The Group Committee holds the view that mass radiography can be extended far beyond its present scope. The mass radiography unit should be under the direction of the physician for chest diseases, who would work in collaboration with appropriate officers such as medical officers of health. The work of the unit should be limited to the detection of abnormalities. When an abnormality is discovered, its further investigation, with the consent of the patient's general practitioner, should be carried out at the clinic for chest diseases.

It is considered that no medical officer should remain in mass radiography for less than one year or more than two. Where a junior physician accepts such a post in the service he should have the assurance of returning to general chest-disease work without loss of status. The idea of part-time service for the medical officer of a mass radiography unit, the rest of his time being spent in the clinic, is thought to be impracticable, at least in a unit covering a large area with perhaps some 30,000 or 40,000 examinations a year. The medical officer's time-table would be likely to be so irregular as to prevent him from fitting into a clinic time-table. If he had a background of sanatorium and clinic work it is thought that he would lose nothing from full-time work with the unit, and experience in such a unit should be regarded as a desirable part of the training of a physician for chest diseases.

Training of Physicians for Chest Diseases

It is acknowledged that in the past tuberculosis work, as a subordinate part of the public health service, has failed to attract physicians of the highest calibre. The best standards of work in the new chest service will be attained only if the opportunities for promotion are as good as those in any other specialty. The terms of service for chest physicians must therefore be the same as for other consultants. Specialization should begin at the registrar level after the practitioner has held house appointments in general medicine and general surgery and preferably a special post giving experience in general chest diseases. A minimum period of three years should be spent in sanatoria and chest clinics, during which time the practitioner should gain experience of environmental medicine, including attendance at the health department of a local authority. (No reference is made in the report to postgraduate diplomas.)

The Nursing Problem

The nursing problem is specially acute in tuberculosis. Fear of infection is real but is not the only reason for failure in recruitment. This report mentions general dissatisfaction over salary scales. Living conditions for nurses are not always of the highest order, and the charges for board and lodging present many anomalies. Again, the responsibility for the complete rehabilitation of the nurse who develops tuberculosis has not in the past been accepted by all hospital authorities.

It is considered that for the adequate staffing of sanatoria and hospitals it is highly undesirable to work to an arbitrary ratio of nurses to in-patient beds. In convalescent and ambulatory wards the ratio might be 1 to 6, but in tuberculosis hospitals and sanatoria engaged in active treatment, including the practice of major and minor thoracic surgery, with or without out-patient clinics, a ratio of 1 to 2.5 might be necessary, and in theatre units with recovery wards attached it might be 1 to 1. The nursing of tuberculous patients demands a high ratio of trained staff, and the demand cannot be met by the employment of untrained staff in the category of ward orderlies. Part-time nurses are more useful in clinics than in sanatoria, although at present their services to in-patients must be accepted. It is pointed out, however, that two half-time nurses, non-resident, do not add up to one full-time resident nurse.

A real contribution to the solution of some of the difficulties would be met by the inclusion of tuberculosis in the general nursing curriculum and the regular secondment for three months of all student nurses from general hospitals to hospitals specializing in chest diseases. Voluntary secondment of trained staff for six or twelve months would also be most useful. Specialized training in tuberculosis nursing should particularly attract groups of men and women who seek postgraduate qualifications or desire a satisfying vocation other than general nursing. As for the fear which lurks in the tuberculosis hospital, the obligation of routine methods of hygiene in the wards, the use of tests for susceptibility, and the vaccination of susceptibles reduce the risk of illness to below that of the general public.

The following recommendations are made:

(1) Vigorous and well-planned propaganda to stress the urgency of tuberculosis as a national problem.

(2) Education of the nursing profession in the achievements of thoracic surgery and modern chemotherapy.

(3) Inclusion of tuberculosis nursing in approved hospitals or sanatoria in the training of student nurses.

(4) Nurses in general training who present minimal lesions to be advised to accept temporary secondment to sanatorium nursing.

(5) Extension of rehabilitation of trained and untrained nurses suffering from tuberculosis.

(6) Service allowance payable to nurses in tuberculosis service to be paid in two instalments, after six and twelve months' service.

(7) Living conditions and amenities for resident staff to be of the highest order.

(8) Some form of effective representation of sanatorium nurses on the General Nursing Council.

Prevention

In the second part of the report, which deals with prevention, the existing provisions are set out and some of them underlined. Under Section 28 of the National Health Service Act local authorities are given power to carry out functions in relation to prevention, care, and aftercare, and the Minister in his Circular 118 in 1947 directed that such arrangements should be made in relation to tuberculosis. One of the major tasks is to encourage the discovery of pulmonary tuberculosis in the preclinical stage, so that the number of uncontrolled sources of infection may be gradually reduced. "True prevention, apart from the control of infection, must deal primarily with the creation of positive health by the improvement of standards of life, morale, food, housing, and hygiene of the whole population, with particular emphasis on children and adolescents."

A list of the principal preventive measures available to the local health authority is given:

(1) *Supervision of Notifications.*—Close co-ordination is necessary between all engaged in tuberculosis work to ensure that as much as possible is done to follow up the notifications with the object of tracing the sources of infection.

(2) *Health Education of the Population.*—It should be made clear that it is the unsuspected open case that is the public danger.

(3) *Assisted Housing Schemes.*—Housing authorities should give high priority to the rehousing of tuberculous families. Some form of assistance towards higher rate charges should be given in cases of needy families, either through the Assistance Board or by the provision of preferential rents.

(4) *Liaison with Regional Tuberculosis Service.*—The medical officer of a health authority must be given full and up-to-date information regarding new patients and their movements and changes of classification. "Accurate records form the basis of efficient action."

(5) *Mass Radiography.*—This is the responsibility of regional boards, but medical officers of health should participate actively in the planning of the service.

(6) *Control of Milk Supplies.*—Application of laboratory tests should be on a liberal scale, and publicity concerning milk supplies infected with tubercle bacilli is desirable. The Milk (Special Designations) Act, 1949, will go far towards solving the difficulties of bovine infection.

(7) *B.C.G. Vaccination.*—Its adoption in this country for certain susceptible groups is welcomed.

(8) *Examination of Contacts.*—Contact examination is extremely important and is comparable to mass radiography in that it discovers tuberculosis in persons who do not admit to being ill. The local health authority should assist through health visitors in encouraging contacts to be examined.

Care and Aftercare

The object of care work is to prevent deterioration in the living standards of the patient and his family. Sources from which assistance can be obtained are (1) the National Assistance Board, which has wide powers for assisting tuberculous families; (2) the welfare committee of the local health authority, which may provide a wide range of help in kind; (3) the voluntary care committee, giving help from charitable funds; and (4) private charitable trusts existing in a few areas for the benefit of local residents.

The provision of home helps is in many cases essential, and every effort should be made to further this service.

It is stressed that in all schemes the health visitor and the almoner are the vital link between the home and the source of assistance.

Rehabilitation

The restoration of the patient to employment is, as the report points out, again a matter for co-operation. It depends upon the employers, the chest physician, the officers of the Ministry of Labour, the medical officer of health, and not least the patient himself. The object of rehabilitation is to make the patient as useful a member of the community as his disability permits. Rehabilitation is both mental and physical. The majority of non-infectious patients are able to find work on their own account; the problem is almost confined to tuberculous patients who remain infectious. Special measures on their behalf take the form of village settlements, employment under the Disabled Persons (Employment) Act, and local authority employment schemes assisted by the Ministry of Labour.

Village settlements, numbering about half a dozen, have done valuable pioneer work, which should be continued, but it is thought that there is no case for each local authority setting up its own settlement. Accommodation in night sanatoria and hostels for people in ordinary industry should be provided. Under the Disabled Persons (Employment) Act, employers are required to have a quota of 5% of registered disabled in their employment; persons substantially disabled by tuberculosis should be encouraged to register. A final recommendation is for the extension of "Remploy" factories by the establishment of local workshops. "Remploy" factories are built by the Disabled Persons' Employment Corporation specially for tuberculous persons. There is also the special problem of rehabilitation of students suffering from tuberculosis. The development of some scheme to enable the student to continue with his studies while still under medical supervision would be of great value. Sanatoria for this purpose have been established in France and Switzerland.

This comprehensive and forward-looking report should receive the attention it deserves from the appropriate Ministries, the regional hospital boards, and the local authorities. In its proposals for the organization of the chest service and the staffing of chest clinics and sanatoria it lays down lines along which regional and local schemes may effectively proceed.

Half a century has passed since the first distribution of the Nobel Prizes. During this time a total of 242 scientists, authors, and peace champions from twenty-three different nations have been awarded prizes totalling Kr. 28,000,000 (£1,900,000). In order to commemorate the jubilee the Nobel Foundation in Stockholm has issued two almost identical volumes, one in Swedish and one in English, in which a number of representative writers review Alfred Nobel and his life's work as well as the Nobel laureates and their achievements. (*Nobel—The Man and his Prizes*, pp. 620, edited by the Nobel Foundation and published by Sohlmans Förlag, Stockholm, Kr. 30.)

EXPERIMENTS ON THE NERVOUS SYSTEM

PROFESSOR ADRIAN'S LECTURE

The nineteenth Stephen Paget Memorial Lecture, given under the auspices of the Research Defence Society, was delivered by Professor E. D. Adrian, O.M., on November 22. Sir Henry Dale, O.M., was in the chair.

Professor Adrian took as his subject "Experiments on the Nervous System." In discussing the role of animal experiment in this connexion he said that it was true that the bodies of different living creatures were not all alike, and experiments on animals could never completely show what happened in bodies like our own. The work on sulphonamides and on the antibiotics had been based on long-drawn-out animal experiment, but the final experiment was on man. Between man and animals there were some differences in their reactions to drugs and considerable differences in the nature of the infections from which they suffered. But the testing of new remedies on animals before they were used on man had saved an immense amount of sickness and death. If it had been necessary to make all preliminary experiments on man, it would have taken many years to reach anything like the present control over bacterial disease.

Advances in chemotherapy had depended on a knowledge of the general defensive mechanisms of the body, and these were much the same in man and in animals. With most of the special organs the differences were not so important as to prevent a great deal from being learned about the human organ from a study of the corresponding organ in animals. Operations now made on the human heart could be planned by experiments on dogs before they were carried out on babies with congenital heart disease. The nervous system, however, was in a special category, at least as regards its highest level, the brain.

The hearts of different mammals varied in size and shape, but the variations were not much greater than those between one make of motor-cycle and another. One heart was built for speed and another for reliability, but both were blood pumps and worked with the same cycle of operations and the same kind of valve. The differences between the brain of a man and of a rabbit, however, were of quite another order. They were best realized by considering the kind of life that man lived as compared with the rabbit. The human brain, like the elephant's trunk or the giraffe's neck, was an organ developed to a special degree in one species and responsible for behaviour peculiar to that species. Man's dominant position in the animal world had depended on the evolution of the human brain, which had made human behaviour far more intelligent than that of any other animal. Man could control his environment in a manner which no other kind of animal attempted. That was why so much reliance had to be placed on observations and experiments on man if mental disorders were to be understood and treated. Animal experiments were necessary also, but the knowledge to be gained from them came at a much earlier stage. They showed the general plan of the central nervous system, but they could not be expected to cover all the ground.

Investigation of Mental Disorders

Another difficulty arose from the fact that in most mental diseases it was impossible to find what material change had taken place, what had gone wrong with the organization of nerve cells and fibres on which mental processes depended. The abnormal working of the brain could be apprehended from the patient's abnormal behaviour, but often enough no brain lesion could be detected with any certainty. There were a few conditions in which the pathology was known, such as general paralysis of the insane and the alcoholic psychoses, but with the rest they were faced only with symptoms. Many people had been seriously concerned when they read of treatments in mental hospitals in which the human brain was subjected to violent disturbance or permanent mutilation. These critics could now be wise after the event, but the history of these new methods of treating mental disorders was instructive, for it showed how much medical men were handicapped when they

moved outside the field within which animal experiment could give a direct answer.

Professor Adrian then discussed the place of insulin and electric convulsion therapy and leucotomy in the treatment of mental disorders.

Fortunately there was now another source of information about the human brain, deriving from the great advances which had been made in neurosurgery. The exposure of the brain was a much less formidable undertaking than it was when Victor Horsley began to remove cerebral tumours. It was possible to explore the brain surface by electrical methods, and maps could be constructed, comparing with more complete maps made from the brains of the larger apes. The human brain could be stimulated electrically with the patient fully conscious. The procedure was not painful, and the patient could say what he felt or what came into his mind. Thus the work of Penfield and his colleagues in Montreal had afforded new information about the brain which could not be derived from studies on animals, although it could not have been looked for had not studies on animals prepared the way for it.

The Place of Animal Experiment

So far he had dealt only with disorders at the highest level of the central nervous system. High-level activities were developed in man, and accurate information about them could not be expected from animal brains. Advances must come mostly from what could be found out from patients. Experiments on patients were justifiable up to a point when the subject was willing and there was little risk of permanent injury. When the subject was insane and the risk appreciable, the only kind of experiment which could be made was one which, if successful, would give direct benefit to the patient himself. Animal experiments, therefore, had played little part in deciding the present trend in psychiatric treatment. Most of the data had had to be obtained by observation or experiment on man; therefore progress was bound to be slow. On the other hand, many disorders affected the lower part of the nervous system, and here there was quite enough likeness between the human nervous system and that of animals to throw light on the general plan and way of working of the nervous machinery. An essential step in the understanding of these disorders was the accurate mapping of the nervous system and a knowledge of the function of the different pathways. Here the lecturer described the work of Sherrington and other investigators, and touched on some of the achievements of modern neurology in war and peace.

In conclusion he said that he might seem to have assumed that if experiments were made on animals there must be some proportion between the pain inflicted and the benefit gained. That rule was just, but it was a rule which, fortunately, needed to be applied very rarely indeed. The days were long past when operations on animals, as on man, had to be made without anaesthetics, and in the great majority of experiments on the nervous system the animal was anaesthetized and never regained consciousness. If the animal survived there might be paralysis or loss of sensation, but severe pain—the kind of pain which was experienced when the skin was cut—was quite inadmissible, even on the most utilitarian ground, because it would almost inevitably make the experiment valueless.

Pain was an experience of the mind rather than of the body. In unconsciousness one did not feel pain, and yet the sensitive nerve endings and nervous pathways might be sending up urgent signals which would evoke severe pain if the brain were able to receive them. On their way to the brain these signals might give rise to many of the bodily reactions which accompanied pain, such as rise of blood pressure, deeper breathing, widening of pupil, and tension of muscles. These could be studied in completely unconscious animals, because they occur in the decerebrate preparation in which the whole of the forebrain has been destroyed under anaesthesia.

Traditional beliefs died hard, and there was still a tradition that experiments on animals must be painful, and it was natural and right that people should be concerned with this, and those who carried out experiments had the responsibility of making sure that their concern was needless. In the days before anaesthetics experiments on animals were undoubtedly painful, but whether one approved of them or not it must be remembered that very many people had profited by them. Anaesthetics were introduced a hundred years ago, and the experiments of Magendie in 1822, from which he showed the complete separation of motor and sensory functions, and which shocked our forefathers and quickened the anti-vivisection movement, could now be made quite painlessly.

Reports of Societies

TREATMENT OF BELL'S PALSY

A meeting of the Section of Otology of the Royal Society of Medicine was held on December 1, at which Mr. TERENCE CAWTHORNE read a paper on the pathology and surgical treatment of Bell's palsy. Mr. D. F. A. NEILSON was in the chair.

The researches of Sir Charles Bell into the function and diseases of the facial nerve, or "respiratory nerve of the face," to use his own nomenclature, had led in the first half of the nineteenth century to his name being attached to all forms of facial paralysis, no matter what the underlying cause might be. In 1893 Gowers was able to distinguish such obvious causes as injury, infection, and new growth from the true Bell's palsies, those due "to a neuritis within the Fallopian canal."

Mr. CAWTHORNE stated that in a series of 270 cases of facial paralysis under his care he had found that Bell's palsy was responsible for 157 (58%). The disease affected chiefly those between the ages of 20 and 60 years, and men were slightly more prone to the condition than women.

Because the disease did not cause death, histological material was rarely available, and the pathology had not been established; but from his operative findings he was able to state that the lesion lay in the trunk of the facial nerve at or near the stylo-mastoid foramen. Swelling of the nerve was probably the result of ischaemia, and this might be the result of exposure to cold. The consequent compression of the nerve trunk in the bony Fallopian canal would impair the transmission of neural impulses. Mr. Cawthorne described the appearance of the nerve as seen through the binocular operating microscope, and said that the nerve appeared to be unduly constricted at the point where it left the stylo-mastoid foramen and fine haemorrhagic streaks were to be seen running up the length of the nerve for a few millimetres. Above the constriction the nerve was swollen. In three cases of long-standing paralysis the trunk was found to be a shrunken fibrous strand.

Of 151 cases of severe Bell's palsy, within two months 75 (50%) had completely recovered, 19 (12%) had made a partial recovery, and 57 (38%) showed no signs of improvement. The worst prognosis for spontaneous recovery was found in those in whom the facial paralysis was complete and the faradic responses were absent.

Ballance and Duel in 1932 had treated severe cases by exposure and "decompression" of the nerve at the stylo-mastoid foramen and in the lower part of the Fallopian canal.

The speaker said that where the paralysis had remained complete for a month the likelihood of spontaneous and complete recovery was remote, and if in addition the responses to faradic stimulation had been lost he advocated decompression of the nerve. In this direction lay the best chance of good recovery. He stressed that, valuable as were electrical stimulation and splintage of the paralysed side of the face, they contributed nothing to the treatment or relief of the lesion responsible for the palsy. The operation was best done in the second month of the disease. The nerve was exposed through a post-aural incision, and, after the trunk had been identified, as much of the mastoid cortex was removed as would allow of free access to the lower part of the nerve. Slitting up of the sheath and manipulation of the nerve demanded the utmost gentleness and was best done under the binocular operating microscope by an experienced surgeon.

Probably 75% of all cases of Bell's palsy which had lasted a month would show some spontaneous improvement, but frequently there was residual paralysis or spasm of the facial

muscles. Of 37 cases recently treated by decompression, 31 had shown considerable improvement, while 6 had not benefited appreciably. Of these last, in 3 the nerve had been found reduced to a thin fibrous cord, and these cases might have done better if this had been excised and a nerve graft inserted.

Air Commodore E. D. D. DICKSON read a short paper on the results of conservative treatment of 37 cases of facial paralysis by means of physiotherapy and splinting the facial muscles by a plastic hook attached to the upper teeth. Treatment lasted from between one and six months. Thirty-three cases recovered completely, three are still improving, and one had failed to improve at all. He was in favour of non-operative measures in dealing with Bell's palsy, at least in the first few months.

Miss D. J. COLLIER was of the same opinion, and she challenged Mr. Cawthorne's views on the pathology of the condition, and his rationale of treatment. If Bell's palsy was due to exposure to cold, why was it not more common in cold climates or in the winter months? Why did it occur in small epidemics? These suggested a virus infection.

She asked whether Mr. Cawthorne recommended decompression to prevent degeneration of the nerve or to promote regeneration. Electromyography had shown that physiological block could persist as long as six weeks. The cases of rapid recovery claimed for decompression might belong to this group. When degeneration of the nerve had occurred recovery could only be by regeneration. The rate of regeneration might vary, but clinical evidence of re-innervation could not be expected earlier than three months and might not be apparent until much later. A single negative faradic response did not preclude the possibility of spontaneous recovery. Serial observations of the electrical reactions and by electromyography were needed for prognosis. The latter might give evidence of impending recovery two to three months before facial movements could be seen.

Operations in traumatic cases of facial paralysis showed that the nerve completely filled the canal during life, and nerve bundles always bulged out when the nerve sheath was opened. If the primary lesion in Bell's palsy was held to be a constriction at the stylo-mastoid foramen it was curious that the nerve should be pathologically constricted just where the Fallopian canal was widest.

Miss R. BOWDEN demonstrated by a series of graphs the importance of serial electrical examinations of both nerve trunk and muscular response in arriving at a reliable estimate of the prognosis. The technique should be a standardized one, using for choice a stimulator in which the current could be measured accurately.

Mr. I. A. TUMARKIN stated that permanent paralysis was caused by herpes of the geniculate ganglion. He doubted the efficacy of an operation which decompressed the lower end of the facial nerve and left its upper reaches unexplored.

Mr. CAWTHORNE, in reply, agreed that the aetiology of Bell's palsy was still in doubt, but felt that the demonstration of constriction and swelling of the nerve at the lower end of the Fallopian canal was so well proved at operation as to pinpoint the site of the lesion accurately. Should the swelling spread up the canal so as to implicate the chorda tympani and give rise to homolateral loss of taste, the prognosis was not necessarily worsened. He agreed with Miss Collier and Miss Bowden on the value of serial electromyography in watching the course of the disease.

MANCHESTER MEDICAL SOCIETY

The Dangers of Giving Fluids

In a paper on "Some Hazards of Fluid Therapy," read on November 1 before the Section of Medicine, Dr. D. A. K. BLACK warned members of some of the dangers of indiscriminate treatment with intravenous fluids. Although the value of suitable treatment with saline or glucose solutions was well established, their use might also give rise to harmful effects which were the more dangerous as they might develop insidiously.

The normal composition and distribution of body fluids were reviewed, and the essential differences between a predominantly salt depletion and a predominantly water depletion were discussed. In spite of Marriott's work on the subject, saline fluid was still given when a non-saline fluid would be more appropriate, and vice versa. Clinically, a complaint of thirst should suggest predominantly water depletion, and signs of peripheral circulatory failure predominantly salt depletion. The estimation of serum sodium was the most direct biochemical method of distinguishing between salt and water depletion. The test for urinary chloride might be misleading in the presence of acidosis or alkalosis, or of renal or suprarenal disease.

In addition to giving the wrong type of fluid, it was possible to give excessive amounts of the correct type of fluid. This was well appreciated with salines, but the dangers of an excessive intake of non-saline fluid were less well known. In anuria, it was essential to restrict the intake of water as well as of salt; and there was also a risk of water intoxication in the period following surgical operations, in which Coller and his associates had shown that the elimination of water was seriously impaired.

There was a danger of producing a significant acidosis when large amounts of normal saline were given to correct salt depletion; it was better in severe salt depletion to give a fifth of the required sodium as lactate. The use of ammonium chloride in the treatment of alkalosis was discussed. When alkalosis was caused by excessive alkali administration, ammonium chloride could safely be given; but, when alkalosis was due to vomiting, it was associated with salt depletion, and normal saline was more suitable than ammonium chloride. It was important to remember that a low alkali reserve might be due to a respiratory alkalosis, and not to a metabolic acidosis; for example, in salicylate poisoning the low alkali reserve was a sign of respiratory alkalosis, and sodium bicarbonate might not be the best treatment. Caution was very necessary in the intravenous use of potassium. Potassium infusions should be given very slowly, to avoid cardiac arrest, and the oral route was much to be preferred, whenever and as soon as practicable.

In conclusion, Dr. Black disclaimed any wish to set up a new specialty of applied electrolytology, but suggested that those undertaking fluid therapy should ask themselves three questions, which could often be answered clinically:

(1) Do we need to give fluid at all?
(2) Should we give saline or non-saline fluid?
(3) Have we given enough, or too much, fluid?

Healthy kidneys were a great help in correcting mistakes in fluid administration, and, after all, most of the patients survived.

A lively discussion followed.

Mice and Lymphocytic Chorio-meningitis

On November 8 Dr. J. O'H. TOBIN read a paper on "The Laboratory Diagnosis of Lymphocytic Chorio-meningitis" before the Section of Pathology. Dr. Tobin said that one of the many types of lymphocytic meningitis was caused by the virus isolated originally by Armstrong. This virus caused true lymphocytic chorio-meningitis, and was pathogenic to man, mice, guinea-pigs, and other animals. In man the virus could give rise to three different clinical pictures, besides an unapparent infection—namely, a simple upper respiratory infection, an influenza-like syndrome followed in one or two weeks by meningitis, or an encephalo-meningitis. In the laboratory the diagnosis was made by the isolation of the causal agent and confirmed by serological methods, or solely by serological methods. Virus could be isolated from C.S.F., throat washings, or blood by inoculating mice or guinea-pigs with fresh material. There was a specific complement-fixation test in which infected guinea-pig spleen was used as the antigen; neutralizing antibodies could also be demonstrated in convalescents.

The disease was associated with house mice, which carried the virus, and eradication of mice in the vicinity of the patient's home should be attempted. In Manchester two such foci were present, and all the cases except one seen in the city had come from these two localized areas. From the routine point of view serological diagnosis was the method of choice, as attempts at virus isolation from human material were a waste of time unless a virus laboratory was in the immediate vicinity.

Correspondence

Displaced Registrars

SIR,—The parlous position of so many registrars is not a matter that should be allowed to be fought out by them alone: we do, although it is sometimes not very obvious, form a profession, in which we owe duties to one another. The seniors must help their junior colleagues to get a fair deal.

It is, of course, obvious that far too many registrar posts have been created, and that when the present holders of these redundant posts have been settled elsewhere they should be allowed to lapse. In this way a recurrence of the present muddle due to incompetent planning would be impossible. Even so, we are faced with the question, "What shall the present registrars do to make a living and to make use of their skill and knowledge?" May I make a few proposals which if put into effect would increase the number of consultant appointments, with only a small increase of expense?

There are many part-time consultants who do nine paid sessions a week, but who remain on the staff of a hospital at which as honoraries they do other unpaid sessions, sometimes because they have a sentimental attachment to an institution at which they have worked for many years, sometimes because there are pay-beds, and for a variety of other reasons. If such unpaid sessions were abolished, there would be vacancies, which could be filled by up-grading senior registrars. Perhaps the number of sessions would be small, but it would give these people a chance to get their feet on to the consultant ladder.

Secondly, in order to reduce the competition for consultant posts I should suggest that nobody who is now a consultant and who is over the age of 50 (or perhaps even 45) should be eligible for appointment to any new post, except of course university ones. (It may prevent rude letters if I say frankly that I am over 50.)

Thirdly, again in order to decrease competition for posts it might well be agreed that no part-time specialist of consultant status who is doing seven or more sessions should be eligible for further sessions.

If these three suggestions were carried into effect the problem would not be completely solved, but at least some of the (about-to-be) displaced registrars would have a chance of climbing upwards.

There is one difficulty which at the moment seems to be insuperable: that is, the unsuitability of men who have been registrars for some years to become competent general practitioners. Could they not be given financial assistance during a period of training? And should we not take steps to see that this absurd position never recurs by doing away with the mobs of registrars who mill round the out-patient and casualty departments, replacing them by old-fashioned casualty or receiving-room officers—a group of residents who made the finest and most promising general practitioners?—I am, etc.,

London, W.1. A. PINEY.

SIR,—We suggest immediate collective action by all registrars for the amendment of the Ministry of Health edict RHB (50) 106, if only to avert our financial ruin, irrespective of the wider questions of increasing the number of consultant posts available and maintaining adequate hospital staffs. We suggest two basic demands to achieve this: security of tenure of non-teaching hospital appointments above the rank of senior houseman, such as existed in the municipal hospital services; constructive proposals for those leaving the hospital service, to replace the impracticable suggestions about the armed Services and the Colonies contained in paragraph 12. This security of tenure will mean that such hospitals will not be robbed of a vital segment of their medical staffs, for a cut is bound to be at their expense, as it appears unlikely that registrar appointments in teaching hospitals will be cut by half; and that individuals not advancing to consultant status will drop out (as, indeed, they always did) at their own convenience, and consultants will be produced by competition, experience, and qualifications instead of by any rigid and uniform time-table system. Artificially recurring crises of superfluous registrars would not then arise. At present the situation can be compared to a factory where the foremen not reaching the board of directors in two years are automatically thrown out of the industry.

The constructive proposals for those leaving the hospital service might include facilitated entry into general practice and training courses without loss of pay—essential for those who have spent years in a specialty—preference for practices where part-time work in the specialty would be available, and no sudden termination of contracts now.

We urge the most vigorous action of all registrars by personal interviews with M.P.s, through their own group of the B.M.A., and, if possible, by deputation to the Minister of Health.—We are, etc.,

J. MURRAY DALE. P. W. GRANT.
H. BOURNE. N. B. JETMALANI.
J. A. IRWIN. J. F. HUDSON.
J. B. JEFFRIES. J. I. HALLINAN.
N. C. CONNELL.

Coulsdon, Surrey.

SIR,—The Minister of Health in the House of Commons on November 3 said that "this circular [referring to RHB (50) 106] was issued after full consultation with the profession's representatives." There is no evidence that these representatives would be any other than the Joint Committee. Yet in the *British Medical Journal*, December 2, *Supplement*, p. 205, there is a denial of any agreement with the Minister. The Minister seems cautious enough not to mention agreement, but only consultation. The statements, however, are sufficiently at variance to require further information urgently. The committee can vindicate themselves only by issuing a full and complete statement of what transpired at these consultations, and how far they were committed in this infamy.—We are, etc.,

Central Middlesex Hospital, London, N.W.10. THE REGISTRAR GROUP.

*** See the Joint Committee's statement in this week's *Supplement*, p. 245.—ED., *B.M.J.*

Cost of Academic Clinical Office

SIR,—Who can now blame Oxford for living in a world apart? Academicus (December 2, p. 1275) paints a picture so remote from the grim but exciting world of 1950 as to suggest a fantasy. £250 for professional entertaining? £670 *annually* for a car, £160 for travel, £90 for a telephone? This is surely Wall Street, not the quiet path of academic life. What would an Oxford don, with his gross income of perhaps £1,200 (and that twice the income of many a schoolmaster), think of these figures?

However much individual experience induces a personal smart, the truth is that the twentieth century is one of social revolution. Privileges no longer go by divine right but are subject to scrutiny. The economics of medicine, especially in its specialist branches, still appear to the less fortunate as highly favourable (witness the huge entry to the medical schools). It is not "appeasement" but common sense to recognize this fact. To put it on its lowest plane, we may as well make a virtue of necessity in acknowledging the essential justice of the social change. Nor is there the slightest prospect of a general rise in the standard of living, but rather of increased "austerity" as the demands of depressed millions all over the world are met, either by agreement or conflict.

This is not to deny the essentially sound argument in Academicus's letter—i.e., the distinction made by the Ministry of Health in allowances and by the Inland Revenue in expenses between whole-time specialists and those in private practice. It is this distinction, rather than the distinction of teaching and research, which is anomalous. The choice of an academic career has always been recognized, *ceteris paribus*, as implying a financial sacrifice. And there is one anomaly which affects all intellectual workers—the refusal of the Inland Revenue to allow expenditure on books and journals as a professional expense; this constitutes a tax on thought and efficiency.—I am, etc.,

Bickley, Kent. DUNCAN LEYS.

SIR,—It is unfortunate that the plea of Academicus (December 2, p. 1275) for more adequate remuneration should be based on a collection of extravagant figures and illogical comparisons, since these are more likely to lose than gain the sympathy of his colleagues. From the size of his petrol bill and telephone account, one is tempted to deduce that a considerable number of his claimed 70 hours of work in the week is taken up by motoring and using the telephone. The former, at least, is much higher than one would associate with the essential motor travel imposed by a full-time university appointment.

If the above comments seem uncharitable, may I atone by offering Academicus some advice? Since his £1,400 car is costing him some £250 per annum in tax, insurance, garage, and repairs, might he not be advised either to drive more carefully or to try a different garage or, perhaps, get rid of his present car? I cover 14,000 miles annually in my 30-h.p. car for about £200 (which figure includes petrol, full maintenance, overheads, and garaging at city rates). As regards his figure for his net income, it all depends on what you mean by "net."

Finally, I feel that Academicus rather oversteps the mark when he imagines that most academic clinicians are endowed with substantial wealth from other sources. This appears to me a very rash assumption.

The trend of my remarks may allow me to assume the pseudonym of

REALIST.

SIR,—Academicus (December 2, p. 1275) must have a peculiar interpretation of the necessary expenses of his occupation. I would suggest that he cannot unduly complain when he can run a £1,400 car and spend £250 + £198 + £160 = £608 on what is, after all, personal enjoyment.—I am, etc.,

Barnsley. H. A. CROWTHER.

SIR,—An academic scientist, with a gross income small compared with that of Academicus (December 2, p. 1275), may perhaps sympathize in general with the position of the academic clinician. Yet, in all honesty, he must wonder at a man who, while claiming an effective income of £3 7s. 6d. per week, can apparently write off a £1,400 car completely after only four years. Is the Minister of Health alone responsible for medical extravagance?—I am, etc.,

Hull. J. J. KIPLING.

Protection of Laboratory Animals

SIR,—The time has come to thank you cordially for permitting a correspondence about my draft (see *Journal*, September 23, p. 724, and October 14, p. 888) and to thank likewise those who have contributed comments, whether favourable or unfavourable.

I do not acknowledge the sentiments and aims which Dr. Lane-Petter and Dr. Dyer (November 11, p. 1114) have imputed to me. It would be tedious to rebut all these imputations, but if any reader believes I have sinister intentions I would crave an opportunity of sending him gratis a pamphlet, *How to Befriend Laboratory Animals*, which has been well received by the scientific press and has been distributed in America by the National Society for Medical Research, Chicago. The vivisection controversy has induced strong feelings which are unfavourable to mutual understanding and dispassionate judgment, but I still believe that a good deal of common ground can be found if we patiently analyse it out. The need remains for an agreed scheme which can be offered to foreign humanitarians who seek advice. My draft was got out precipitately with the August conference at the Hague in view, but now that it has missed that boat the revise can be tried on a few selected dogs before being submitted to general discussion. The form of an Act of Parliament was adopted in the hope that concrete proposals would keep discussion to the point, but it aroused so much prejudice that the redraft will have to be in narrative form.

No suggestion of altering the British statute has arisen, of course, though the latter is unsuitable for export because it would lose its virtue if divorced from the administrative tradition that has been built up on it. But surprisingly many people believe that in this country experimental biology consists in cutting animals up alive without anaesthetics; the reports of the Home Office are not widely read, and the Research Defence Society deals mainly with the utility of research. What would reassure the public more than anything else would be to know that research scientists as a class were disposed, in a generous and large-minded spirit, to help a genuine if imperfect attempt to better the lot of laboratory animals abroad. U.F.A.W. has incurred bitter hostility and deliberately sacrificed much support by having licence-holders among its officers and recognizing that experimenters are as humane as anybody else. Is it not rather ungenerous, therefore, on the part of some medical men to adopt a purely negative, hostile, *nitouche* attitude, especially when criticisms have been asked for and welcomed? Happily *non sic omnes*; one director of research is kindly collecting comments for me from all his staff.—I am, etc.,

Universities Federation for Animal Welfare, London, N.3. C. W. HUME.

Reconsideration of B.M.A. Policy

SIR,—It appears that many people outside the profession are asking whether it is sufficient to plan a neat and orderly Health Service (though experience has demonstrated beyond doubt that it is neither) unless the planners ensure that those who are asked to work it are satisfied that the terms and conditions of service are satisfactory to them and to the patients alike; and whether we, as doctors, are taking a broad enough view. Unfortunately, and with some justification, it appears to them that we are boggling over money details when, as you so rightly say (*Journal*, December 2, p. 1262), we should be concerning ourselves with the principles and the "failure [of the Ministry] to define what should be the terms of fulfilment of the Spens recommendations."

If we are able to persuade the Ministry to give such a definition, so much the better; but surely, Sir, we as a profession have many other and more important principles on which we require decision. If our grounds of complaint are adequately marshalled, they will present a damning indictment of the Service and will present us with adequate reasons for withdrawal unless they are rectified. This matter is not one which concerns the G.P. only; it is of vital importance to the consultants as well as to the M.O.H. group; it concerns every branch of the profession, and it concerns the public.

As Dr. Ireland and Dr. Pridham have already said in Council, what is urgently required is a reconsideration of B.M.A. policy to fit the new set of circumstances with which we are faced.

After two and a half years' working of the National Health Service, is such a review not imperative? If this suggestion is acceptable, we should then ask the Government to meet us and invite them to reconsider, in an entirely different atmosphere from that which has prevailed in the past between us, the whole Act and its regulations.

There have been mistakes on both sides. How could it have been otherwise in so vast and complicated an experiment? Is this not the time for recriminations to cease and for broader and wider counsels to prevail?

It behoves us to set our own house in order first, by setting out quite clearly in one document, covering all branches of the profession, the main considerations which lead us to condemn the Service in part, and put forward constructive proposals. If we can persuade the public, as we undoubtedly can in such a document, that our interests and theirs are irretrievably integrated, we shall have their support and good will, and no Government, whatever its complexion, can afford to ignore this.—I am, etc.,

Tunbridge Wells, Kent. R. PROSPER LISTON.

Dead Bodies in Water

SIR,—An admittedly limited experience lends small support to Dr. Hugh Willoughby's suggestion (December 2, p. 1277) that drowned men taken from the Thames invariably float face downwards. I have seen at least one body which did not, and an ageing Thames waterman and certain members of the Metropolitan and River Police will bear me out. Fifteen years ago, perhaps more, I was crossing Waterloo Bridge when I noticed

a waterman standing knee-deep in the sludge off the Surrey shore attempting to lasso a floating body. It was that of an elderly man. He was lying on his back as if resting in a hammock, his knees and hips partly flexed, the head and shoulders bent slightly forward, while his arms and hands, at full extension, grasped the edges of a faded Prince Albert coat as if to draw its skirts protectively about his thighs. While the waterman secured the body a young constable signalled a police launch, which towed the remains towards Westminster Pier. Did he fall or was he pushed? This question naturally arises, for the manner of death may influence in some degree the way a body floats. Its discussion must be left to those with more knowledge of these matters than myself.—I am, etc.,

Bognor Regis. H. D. Livingstone-Spence.

Sir,—I agree with Dr. Hugh Willoughby (December 2, p. 1227) that female adult corpses float face upwards and male corpses float face downwards in fresh water. I have seen them in rivers as far apart as the Yangtze (China) and the rivers and ponds of India and England. It is sometimes difficult for students and busy doctors to keep these facts in mind clearly, but it is helpful if one remembers that in death from drowning the two sexes float in a position complementary to each other.

I am sorry that I have no experience of salt water in these cases.—I am, etc.,

Appleby Magna, Staffs. J. R. Salmond.

Peanut from Bronchus by Percussion

Sir,—The following case report might be of interest.

The patient, a Chinese boy aged 10 years, was admitted to the Chuanchow General Hospital, Tsinkiang, Fukien, on August 10. His mother stated that, four days before, while eating peanuts he had had an alarming paroxysm of coughing during which he became blue in the face and unable to speak. He was still reluctant to talk. Since the accident he had had some evening fever, and frequent attacks of cough during which he became breathless and cyanosed, but he had not been able to cough up anything. He was somewhat breathless between attacks. At home he had been inverted and his back beaten soundly, but without result.

The child was obviously quiet and anxious, but walked into the consulting-room himself, though he avoided any exertion or sudden movement. He was small for his age, but in good condition. On examination of his chest the right side appeared somewhat collapsed, and respiratory movements and breath sounds were reduced on this side. Temperature on admission was 100° F. (37.8° C.). No other abnormal signs were elicited. A radiograph showed that the mediastinum was shifted towards the right side, but the right lung was still well aerated. A diagnosis of a peanut partially obstructing the right main bronchus was made.

As our hospital is not provided with a bronchoscope the problem of how to remove it was a difficult one, though probably not unique. Our child's size oesophagoscope was obviously too big to pass the cords. Chevalier Jackson states that only 2% of foreign bodies are spontaneously evacuated from the bronchi, and then not usually until the patient is seriously ill.

We remembered that, in some cases of post-operative collapse of the lung, plugs of mucus can be shaken out of the bronchi by the use of postural percussion—i.e., laying the patient with the affected side uppermost, and the head low, then percussing with the closed fist over the other hand placed over the lateral aspect of the ribs. We decided to try to dislodge the peanut in this fashion.

Peanuts and other vegetable foreign bodies cause intense inflammatory reaction in the respiratory passages around the nut, holding it more firmly; also after four days there would be secondary infection increasing the inflammatory swelling. So first we gave penicillin (15,000 units three-hourly for 24 hours) and steam inhalations of tinct. benzoin. co., hoping thereby to reduce this swelling a little. At the end of this time 0.5 ml. of liq. adrenalin. was injected, to reduce the congestion and swelling of the mucosa further and relax any spasm of the bronchus. About five to ten minutes later the patient was taken by the legs and inverted to about 60°. Owing to his struggles it was necessary to have further assistance to hold his chest with the affected side uppermost. The right side of his chest was vigorously pounded as described above. After the third attempt the patient cried out that he could feel the nut in his throat; no doubt his struggles assisted in dislodging it. Sure enough a tap could be felt on the anterior surface of the trachea, occurring with each cough or respiration. This was no doubt due to the nut moving in the current of air, and impinging on the tracheal wall or the cords. It is a well-known sign of a foreign body in the trachea and was, I think, well described by our intern as being like a ball valve in action.

The mother refused permission for further interference in the meantime in the hope that he could cough it out. This seemed to us unlikely, but the child was left lying with his head low and making voluntary efforts to cough it out. The next day the nut was still there, and the mother gave consent for operation.

The patient had not been well behaved or co-operative, and so was given 1/12 gr. (5 mg.) morphine pre-operatively, and this enabled us to perform tracheotomy under local analgesia. The isthmus of the thyroid was divided, and a wider opening than usual made into the trachea. The nut was seen at the first expiration lodged in the lower end of the wound in the trachea. It was removed with a spoon and forceps. It was found to measure 1.75 by 1.00 by 0.75 cm. It is surprising to think that such a large body should be able to pass the cords at all. Some swelling would no doubt have taken place during the time that it was in such a damp situation, but the nut had been cooked in oil, and still showed a practically undamaged glossy surface, and so it is unlikely that it had absorbed very much fluid.

A tracheotomy tube was left in for 24 hours and penicillin continued for four days, when the patient was afebrile and active. He was discharged well with the wound practically healed at the end of seven days from the operation.

We feel that this cannot be a unique situation. We found it worrying, and though we, no doubt, were fortunate we feel that this experience might be of use to others.

It is a pleasure to acknowledge the help of my colleague, Mr. D. W. Short, in the treatment of this case and in reporting it.

—I am, etc.,

Tsinkiang, S. Fukien. N. Tunnell.

The Meaning of Heart Failure

Sir,—Dr. L. Carp (*Journal*, November 25, p. 1201) reviews a series of 100 post-operative deaths in old people coming to necropsy. He states that 27 of these cases died from heart failure, next to bronchopneumonia the largest single cause of death in his surgical patients. Heart failure as a cause of death looms large in most post-operative mortality figures.

The purpose of this letter is to inquire what exactly we mean by "heart failure" following operation. Do we imply by this term that the patient's death is due to decompensation of one or both ventricles with the attendant clinical picture of systemic or pulmonary congestion, or do we, as I believe, imply that the cause of death is due to collapse of the peripheral circulation? One would like to know on what clinical or pathological grounds Dr. Carp assumes that the heart was at fault in these cases. Does he base his conclusions on the finding of "varying degrees and types of cardiac pathology" though the rest of his series showed similar lesions? These cases may have shown pulmonary oedema at necropsy, but to my mind this finding does not warrant the diagnosis of heart failure, as one would expect the same condition in vascular collapse with loss of tone in the pulmonary vessels.

Despite some experience in dealing with the problems arising during the post-operative period I cannot definitely state that I have seen one single case die primarily from heart failure. I have, however, seen many patients die from peripheral vascular collapse, particularly those cases which have been subjected to extensive surgical procedures involving considerable trauma and exposure of tissues. I feel that many, if not the majority, of deaths following operation and certified as having been due to heart failure are in reality due to peripheral vascular collapse. The fault is not in the heart but rather in the vital centres, and in particular the vasomotor centre, which is unable to cope with the stress of the operation. If the heart does fail to maintain the circulation it is only because it receives an inadequate return of blood from the systemic vessels.

Apart from the academic question of nomenclature, it is surely of great importance from the point of view of treatment that we should be clearly aware of the problems these cases present. The treatment of heart failure requires digitalis, mercurial diuretics, oxygen, and even venesection. The treatment of peripheral vascular failure requires the minimum amount of trauma and exposure at operation, the avoidance of heat loss, the maintenance of fluid and electrolyte balance, and the use of stimulants. One is the treatment of the failing heart, the other the treatment of surgical shock.

As long as the term "heart failure" is used to describe what is in actual fact peripheral vascular failure, so long shall we continue to watch the heart and ignore the essential problem in these cases, the peripheral circulation.—I am, etc.,

Dublin. RISTEARD MULCAHY.

Indwelling Tube for Haematemesis

SIR,—I would like to endorse the remarks of Mr. V. J. Kinsella (November 18, p. 1174) concerning the use of a Ryle's tube in the treatment of haematemesis. It would seem, in my experience, that, while its value is fully appreciated by a great many surgeons, it is not so appreciated by the physicians under whose care these cases are first admitted to hospital.

There is no doubt that half-hourly aspirations will show instantly whether bleeding is controlled or not, and this is of inestimable value where surgery may be necessary for recurrent haematemesis. For, whereas a patient will always vomit after the first bout of bleeding, no further vomiting may take place at all, or at least until a considerable quantity of blood is present in the stomach and small bowel, as the shock and the reflex dilatation of the stomach present in these cases depress the vomiting reflex; further, the body having compensated for the shock caused by the initial haemorrhage, it is keyed up to compensate quickly for any further bleeding, and consequently it may be some time before blood pressure and pulse indicate a recurrence of the bleeding.

The value from the operative point of view of having a Ryle's tube passed early in the treatment was well illustrated to me in two cases of haematemesis on which I operated on successive days. The first was admitted to a surgical ward and had a tube passed immediately. Aspiration showed a recurrence of the bleeding 14 hours after admission and transfusion, and I was able to operate in good time, on a somewhat hypotonic stomach, it is true, but not one full of blood, despite the fact that the artery spattered my forehead when the stomach had been opened and the ulcer localized. The second case had had no tube passed since attempts to pass one preoperatively failed because of the distress of the patient. Here the stomach was found full of clot and considerably more distended and flabby than in the previous case. Incidentally, this patient never vomited during his second haemorrhage, which occurred three days after his first, and from the amount of blood in the stomach it must have been proceeding for some time before it was appreciated clinically.

I feel certain, therefore, that a Ryle's tube is an essential in the treatment of haematemesis and that its advantages far outweigh the theoretical disadvantage of the tube itself causing the ulcer to bleed, a likelihood which I believe is negligible.

Finally, in regard to the operative treatment of haematemesis, may I make a plea for simple suture of the bleeding point? In the expert hands of gastric surgeons like Tanner, Ogilvie, and others, gastrectomy may be quick and safe, but in the hands of the average surgeon I feel strongly that obliteration of the bleeding point (with subsequent gastrectomy), a long procedure though it may sometimes be, is a wiser procedure and one with much less risk to the patient.—I am, etc.,

Tunbridge Wells. I. LANGDALE GREGORY.

Teething

SIR,—Perhaps I may illustrate the value of routine examinations and the keeping of height and weight charts during the first five years of life by replying to Dr. H. M. Tietze's letter on teething (December 2, p. 1281). Like Dr. Tietze, I was taught that teething was a physiological process and so should not be looked upon as the cause of infantile ailments. In my early days in child-welfare work I tried to impress this fact on the mothers, often to be told by the owner of a copious family that it was time I had some children myself.

After more than 25 years of child-welfare work with the additional experience of bearing and rearing two children of my own, I would say that the answer in "Any Questions?" of October 28 (p. 1013) is well-reasoned and substantially correct.

Poor colour, lack of appetite, loss of muscle tone, frequency of respiratory infections, and recurrence of the fat intolerance of early infancy (often the cause of vomiting and diarrhoea: careful questioning brings to light the occurrence of loose, offensive, putty-coloured stools following an attack of vomiting and preceded by loss of appetite) occur again and again during the eruption of the first molar and canine teeth. There is a return to normal health for a period until the second molars begin to erupt, when the infections and the offensive stools reappear.

It is a simple matter to mark the period of tooth eruption on the weight chart and to note that all too often the child's weight is at a standstill during this period and that he rapidly puts on weight during a lull in tooth eruption. Few indeed are the children who do not show some signs of distress at this time, and I have long been convinced that it is the loss of muscle tone then which is the cause of so many of the knock-knees so prevalent to-day.

I have heard school teachers say that absenteeism, inattention, and other erratic behaviour occurs more frequently among the age group with the toothless gaps and the imminent eruption of permanent teeth. Children of this age show a recurrence of the bronchial attacks they used to have when cutting teeth as a baby.

From all this I would say that the pain of teething is the cause of lowered resistance to infection, or to a temporary diminution of gastric or intestinal secretions. I would strongly deprecate the dismissal of such ailments as paltry and "only due to teething." Much catarrhal deafness and many deformed chests are the results of respiratory infections untreated because of this belief.

More and more we find the advice of the child-welfare medical officer is sought by mothers who are ex-teachers, university lecturers, or ex-nurses, and even by the wives of medical practitioners. Surely we child-welfare officers have still something to contribute to the future of child health, although I freely admit that we have lost much by not being given the opportunity of keeping in closer touch with the clinical work in hospitals and the curative work in general practice.—I am, etc.,

Manchester. MABEL LINDSEY.

Inoculation and Injection Paralysis

SIR,—The paper by Professor A. Bradford Hill and Dr. J. Knowelden (July 1, p. 1) and your annotation (p. 28) throw light on what is known here among the African natives as "injection paralysis." This condition is seen from time to time in the out-patient department of this hospital, and the story is very similar in each case. The baby had a fever; he was taken to a dispensary, where an injection of quinine was given into a buttock, "since when the baby's leg has been paralysed." It always seems to be the leg which was injected. However, careful questioning of the mother usually makes it clear that the paralysis did not appear until two or three weeks after the injection, and there has never been any evidence of suppuration of the injection site. Clinically, the condition is poliomyelitis; the condition is seen among older children who have not had an injection. It is flaccid and there are no sensory disturbances. Most native dressers are taught carefully how to avoid injections into the region of the sciatic nerve.

It appears, then, that "injection paralysis" has scientific grounds for its existence, and that indeed the localization in the affected limb is a direct effect of the injection, as Congo mothers have so long asserted to sceptical doctors.—I am, etc.,

Sona Bata, Belgian Congo. E. W. PRICE.

Slide Test for P.A.S. Sensitivity

SIR,—I have read with interest the report (November 11, p. 1073) by the M.R.C. on the treatment of pulmonary tuberculosis with streptomycin and *para*-amino salicylic acid (P.A.S.). With regard to testing P.A.S. resistance the view is expressed that the methods used did not prove very reliable. Swedish workers have used Pryce's slide culture method in the P.A.S. test *after* isolation of tubercle bacilli on standard culture media. For the past three months I have been testing P.A.S. sensitivity with the modified slide culture method which I described in the *Lancet*, 1943, 1, 615, adapting it for the purpose by adding P.A.S. to make concentration from 1 mg.% to 0.006 mg.% and also penicillin (10 units/ml. of culture medium) to counteract secondary contamination. This makes it possible to assess sensitivity on the original material, thereby shortening the time-factor as well as enabling us to study the morphological changes of the bacillus. The assessment is easy and, as judged by limited experience, fairly accurate, as one can use direct microscopical examination of the growth either by low- or high-power magnification.

In 20 cases, so far supplied by Dr. Thompson-Evans, the chest physician, the method has been used and found reliable. It is hoped to report on our results at a later date.—I am, etc.,

Shoreham-by-Sea, Sussex. K. S. RODAN.

Volvulus of the Small Intestine

SIR,—The following cases of volvulus of the small intestine are reported as being unusual: the first was a high intestinal obstruction due to volvulus of the afferent loop of jejunum following partial gastrectomy, and the second obstruction from a volvulus at the terminal part of the ileum.

Case 1.—The patient, aged 69, was admitted to hospital on July 27, at midnight, as a suspected case of perforated peptic ulcer. He stated that ten hours previously he was suddenly seized with severe upper abdominal pain, had vomited small quantities of gastric contents twice, had had his bowels opened before the onset of pain, but had not passed flatus afterwards. The pain had increased in severity and was now situated just above the umbilicus; he also complained of severe backache. He passed urine normally after admission.

He had previously had two operations (the second two years ago) for gastric ulcer, but did not know what exact procedure had taken place. He had enjoyed good health since.

He was obviously in great pain and could not lie still in bed. He did not appear unduly shocked (pulse 86, blood pressure 110/70 mm. Hg). Right abdominal paramedian and mid-line laparotomy incisions were both soundly healed. A palpable, fixed tumour was noted about the level of the umbilicus, tender to touch and fixed posteriorly. The abdominal muscles were rigid except in the lower sectors. Bilateral reducible inguinal herniae were present. Peristaltic sounds were audible. Rectal examination was negative, and no abnormal signs were detected in the chest. A pre-operative diagnosis was made of herniation of a loop of small intestine into the lesser sac, or an acute pancreatitis, with the former the more likely.

After passing a Ryle's tube and establishing an intravenous drip transfusion, laparotomy was undertaken under general anaesthetic. On opening the abdomen, the mass previously palpated was seen to be a very distended duodenum with surrounding retro-peritoneal exudation. Under the left costal margin a loop of jejunum was observed lying below the left part of the transverse colon. It was then ascertained that the patient had previously had a partial gastrectomy with retrocolic isoperistaltic gastro-jejunal anastomosis. The opening in the mesocolon had been fixed on the gastric side of the anastomosis. The distended loop of jejunum was easily displayed and proved to be a volvulus of the afferent loop which was unduly long, approximately 8 in. (20 cm.). Rotation had occurred through 360° in a clockwise direction, the fixed points being the duodeno-jejunal junction and the gastro-jejunal junction. Two obstructions, therefore, were present, one in the duodenum, from the closed duodenal stump to the duodenal-jejunal flexure, and the other in the twisted afferent jejunal loop. The obstruction was relieved by rotating the latter through 360° in an anti-clockwise direction; the intestine was quite viable, but showed intense congestion. Consideration was then given to the best method of preventing a recurrence. To undo and reconstitute the gastro-jejunal anastomosis using a shorter afferent jejunal loop was impracticable owing to the congested state of the jejunum, and consequently the mesentery of the afferent jejunum was fixed to the mesocolon by three or four interrupted catgut sutures, and the abdomen was closed in layers.

The patient's condition at the end of operation and for some hours afterwards was apparently satisfactory. 1,000 ml. of normal saline and 560 ml. "casydrol" had been administered. Seven hours after operation signs of acute cardiac failure developed, with fatal termination. A post-mortem examination showed extremely friable myocardial muscle with coronary narrowing. The duodenum was removed *en bloc*, and the surface of the pancreas was seen to be covered by a sanguineous exudate, as was also the area around the coeliac axis.

Case 2.—This woman, aged 46, was admitted on January 31. She stated that six days prior to admission she developed colicky abdominal pain situated below the umbilicus, mostly in the mid-line. Vomiting occurred on the following day, and constipation had been absolute throughout. She had had an enema on each day prior to admission, without result. The pain had been absent for the past 24 hours; the vomiting had become progressively worse and was now offensive, dark, and copious. There was nothing relevant in her past history.

She presented the typical appearance of advanced intestinal obstruction, with sunken eyes, dry tongue, cold extremities, rapid thready pulse, and anxious expression. The abdomen was grossly distended; no mass could be palpated; there was general slight tenderness. Rectal examination was negative and the hernial orifices clear. No peristaltic sounds were audible. Pulse 126, blood pressure 110/70 mm. Hg. A duodenal tube was passed on admission and continuous aspiration started. Intravenous 5% dextrose in saline was also given, and operation deferred for some hours.

Later, under general anaesthetic, the abdomen was opened through a right lower paramedian incision. The caecum was found to be collapsed, and on locating and tracing a loop of lower ileum it was seen that the obstruction was due to a volvulus of the terminal 10 in. (25 cm.) of ileum. At this site there was complete absence of mesentery for 10 in., and the small intestine was free to twist between the fixed ileocaecal junction and the point where the mesentery ended. The volvulus was undone by rotating the bowel through three complete circles, and the mesenteric defect quickly repaired. The abdomen was closed in layers. An intravenous transfusion of normal saline was maintained and 200,000 units penicillin with "sulphamezathine" 1 g. given four-hourly. Gastric suction continued to produce copious amounts of offensive intestinal contents, and the distension was completely relieved ten hours after operation. The pulse rate, however, continued to rise, and the temperature rose to 105° F. (40.6° C.). Twelve hours after operation the patient was *in extremis*, the peripheral circulation was failing, and she died in hyperthermia.

A routine post-mortem examination failed to reveal any abnormality in chest, brain, or renal systems. The entire small intestine was normal in appearance, except for congestion of the mucosa with small haemorrhagic areas: there was no distension. Death was presumed to be due to toxic absorption from the small intestine.

I wish to express my thanks to Mr. J. Philp, F.R.C.S., consultant surgeon to the hospital, under whose care these patients were admitted, for permission to publish the foregoing.

—I am, etc.,

Warrington. BRENDAN MCCARTHY.

Refusal to Appear in Court

SIR,—Mr. A. A. Walford's letter (November 18, p. 1176) ventilates a state of affairs which is proving a source of difficulty to other members of the legal profession. His impression is quite correct about the value of blood tests in some cases of disputed paternity, and Lord Merthyr's Bill, which was unfortunately shelved in 1939 owing to the outbreak of war, was drafted with a view to clarifying the position. At the same time it is only proper that the legal profession should appreciate that these tests do present difficulties to the pathologist. The examination has to be carried out by a person of experience and necessitates access to the proper sera. After completing the test the pathologist has still to be prepared to face cross-examination after, in many cases, waiting at a court for what may be a considerable period. Finally, he may find that the magistrates have reached conclusions completely in conflict with his findings. Under such circumstances it is not difficult to understand the lack of volunteers, and, although a solution can be found to the problem and is, in fact, being devised, nevertheless it would be greatly simplified if Lord Merthyr's Bill were again to be introduced.—I am, etc.,

London, W.1. FRANCIS CAMPS.

Penicillin in Typhoid

SIR,—The sweeping assertion in the leading article "Antibiotic Synergism and Antagonism" (November 18, p. 1160) that penicillin alone is useless in typhoid is not proved. Effective dosage has never been tried. Penicillin resistance is relative. *In vitro* concentrations of 15–20 units of penicillin per ml., and less, inhibit *Bact. typhosum*. This requires an *in vivo* dosage of not less than 20–40 mega units daily, in divided three- to four-hourly amounts, which has never been tried, except for interrupted daily treatment in the carrier state. "Chloromycetin" has also failed in carriers.

The euphoria produced by this dosage, unrelated to any alleviation of toxaemia, together with the subcutaneous injection technique (Garrod, L. P., August 19, p. 453), lessens the needle phobia, apart from which there are no systemic ill-effects. A subcutaneous injection of 2–3 mega units may leave a pea-sized nodule, which takes at least eight months and more to disappear. a fact previously unrecorded. Large doses diminish the rate of renal excretion and raise the blood level correspondingly (*Subacute Bacterial Endocarditis*, by E. Libman and C. K. Friedberg. Oxford University Press, 1948, 2nd ed., p. 364).—I am, etc.,

Dublin. A. D. MCDWYER.

Diagnosis of Placenta Praevia

SIR,—I have read Dr. J. M. Thomson's interesting letter (November 25, p. 1226) on the report of the discussion on placenta praevia (November 4, p. 1055), and I would like to add a few words in support of vaginal examination through the fornices as a diagnostic method. It is usually mentioned only superficially and rather slightingly in obstetrics textbooks. There is some analogy with *x*-ray examination by cystography. Both methods can give positive results only when the head is presenting, and both reveal the space between the vaginal or bladder structure and the contour of the skull. But palpation is more efficient, because we are able to determine the presence of the placenta praevia by its characteristic consistence and to exclude tumours or other causes of high position of the foetal head. It is even possible to distinguish the accumulation of clots from placental tissue if one has sufficient experience in such examinations. The examination gives positive results in marginal placenta and complete placenta (2nd, 3rd, and 4th degree) but is rather negative when only a small part of the placenta dips in the lower uterine segment. Doubtful results are obtained in cases of placenta praevia membranacea, but this is true of *x*-ray examination.

I believe that, in cases with antepartum haemorrhage characteristic of placenta praevia, a positive result in a vaginal examination through the fornices is from a clinical and practical point of view quite sufficient for diagnosis. There is no doubt that feeling the placenta directly after passing the finger through the cervical canal is more positive, but the examination through the fornices has several advantages which cannot be disregarded—namely, it is usually not necessary to pass the whole hand into the vagina unless the head is very high, and so a general anaesthetic can be avoided; there is less danger of inducing bleeding; it can be used in cases where the cervix is completely closed; and it is possible to determine on which side the placenta is situated and where its margin may be found. This is of the utmost importance not only for the prognosis but also for the treatment. For instance, if there is some contraindication to caesarean section in a case of complete placenta praevia with the margin near the internal os, and thus the vaginal route with Willet's forceps, or podalic version, must be adopted, we have the advantage of knowing in what direction we should seek the placental margin after passing the finger through the cervical canal to rupture the membranes. Thus we avoid going in a false direction and making an unnecessary separation of the placenta which induces haemorrhage and impairs the prognosis for the mother and the foetus. If the result from vaginal examination is negative we can expect that it is a case of accidental haemorrhage or lateral placenta praevia (1st degree) and therefore we can adopt an expectant treatment with very little risk.

From the above it can be seen there are sufficient reasons to use this examination more often, and in any case it should always precede the examination through the cervix. In all this there is, of course, nothing to lessen the value of *x*-ray examination, especially by the method of soft-tissue radiography, developed by Dr. Reid, which is of great assistance in clinical examination.—I am, etc.,

London, W.3. C. UHMA.

Two Public Health Problems

SIR,—I am struck by the contrast between, say, two people who want to live in an old bus but are refused permission on the ground that it is insanitary, and the fact that 30 or more people are crowded into a similar space (perhaps without any heating) for hours on end, with all windows tightly closed—e.g., football excursions. Railway coaches are a little better. After the experience gained during the war in air-raid shelters surely it should be possible to fit automatic hypochlorite sprays in at least new buses, and compel their maintenance and use, at least during the winter months. This problem appears to me greater than that of any notifiable fever.

Examination of at least one well-known brand of flat (folded) toilet paper advertised as being safe because it is impregnated with an antiseptic shows that there are four small perforations near the fold (presumably from the folding machine). The risk of hand infection must be appreciably increased by this.—I am, etc.,

Stockport, Lancs. JOHN HEGINBOTHAM.

POINTS FROM LETTERS

Spontaneous Amputation

Dr. J. BROWNRIGG-GLEESON (Dublin) writes: Spontaneous amputation in arteriosclerotic gangrene seems nowadays to be an unusual rarity. . . . Some months ago while in the country I was called to see a patient, whose relatives described her rather euphemistically as suffering from a "sore foot." I found an emaciated, apathetic, cachectic old woman aged 90, who was obviously in an advanced state of senile degeneration, and who had been confined to bed for some time . . . . Coldness of the toes combined with pain, tingling, and numbness, alternating with pain in the calf muscles, had started five months previously. Her pains were accentuated when in a recumbent position but alleviated by dangling her leg over the side of the bed or chair. Her right big toe first showed signs of gangrene, gradually proceeding to a lifeless white colour and eventually presenting a dark shrivelled appearance. . . . The right foot was now in an advanced stage of gangrene, extending from the great toe to about ½ in. (1.3 cm.) proximal to the ankle-joint. There was no line of demarcation present, and the process seemed to be spreading rapidly. Pulsation was felt in the femoral and to a lesser extent in the popliteal arteries, but not lower down. . . . Conservative measures were adopted in view of the patient's advanced age. The gangrene subsequently ascended to midway between the ankle and knee-joints, where a well-defined line of demarcation appeared, above which the tissues seemed healthy. The fore part of the foot was by now exuding a fetid discharge and was anatomically unrecognizable. In the course of a short time separation ensued and was complete within ten days, the parts merely being held together by a few skin tags; there was no bleeding. The tags were severed, and the stump presented a clean healthy appearance. The patient, who was in a moribund state up to this, seemed to show some signs of a slight improvement and became almost rational. But presently the ominous signs of gangrene became apparent in her other foot, and she died from hypostatic pneumonia about three weeks after the amputation. The whole process, from the onset of gangrene to spontaneous amputation, took approximately five months.

Mass Inoculation Technique

Dr. A. BARLOVATZ (Stanleyville, Belgian Congo) writes: Some of your readers might be interested in a method ensuring sterility during mass inoculations of typhoid and other vaccines. For injecting 1–2 ml. doses to each person I use a series of 20-ml. syringes and two dozen hypodermic needles. After boiling and cooling the syringes, the needles are kept boiling in a rather flat container placed on a table within easy reach of the physician's right hand all the time the inoculation is going on. They are fished out of the boiling water one by one, as needed, with a crossed surgical forceps, fastened on to the syringe's nozzle, and after the patient's inoculation replaced into the boiling water, and the next needle in the row lifted out of the water, and so on. The first needle used remains in the boiling water until one has reached the 24th, and is then employed again, having had ample time to lose all living microbes likely to be transmitted from one patient to another. In order to save time, the forceps remain in the physician's hand, held by two fingers, without ever being dropped, and the needles are never handled with the fingers. Thus it is unnecessary to allow any time for the needle to cool: the base does not touch either the physician's or the patient's skin, and the shaft, if it is of small bore (not more than 0.5 mm. external diameter), cools automatically almost instantaneously. With a little practice it is quite easy to inject while holding syringe and forceps in the same hand. If properly aided, a physician may thus inoculate about 200 persons per hour, provided they are guided right up to him so that he loses no time walking to and fro, and under practically satisfactory conditions of syringe and needle sterility, and with a limited amount of material—viz., a few large syringes, about two dozen hypodermic needles, one crossed forceps, one flat metallic container, and one electric or petrol burner.

Indwelling Tube for Gastric Haemorrhage

Dr. IVOR LEWIS (Liverpool) writes: I am in total agreement with the views expressed by Mr. V. J. Kinsella (November 18, p. 1174) regarding the importance of the use of an indwelling Ryle's tube with frequent aspirations in cases of severe haematemesis and melaena. I have recently seen two cases of peripheral circulatory failure terminating in death on the third day following gastrectomy for severe haematemesis and melaena. . . . Death was due to peripheral circulatory failure caused, in my opinion, by secondary shock following the absorption of altered blood in the intestines. . . . Unlike Mr. Kinsella, I fail to see how the blood vessels can contract in a stomach that is dilated and paralysed.

Obituary

Sir JOHN STRATHEARN, C.B.E., M.D.

Dr. W. E. Thompson writes from Winnipeg: It is only in the last few days that I have heard of the death of my old colleague and friend, Sir John Strathearn (whose obituary notice appeared in the *Journal* of September 2). My association with him became close when in 1924 I worked under him as registrar at the Ophthalmic Hospital of the Order of St. John of Jerusalem. This was a time of rather exceptional activity, since the Ophthalmic Hospital was being improved, new departments added, and the scope of work increased in special ways. Strathearn's tireless devotion to each and every patient was evident in many ways, and everyone wondered when the annual reports were issued how it was possible to do so much on the expenditure. His motto was, "The greatest good for the greatest number." Each patient, however humble, was a guest of the hospital, whether as an in-patient, out-patient, or visitor, and the same courtesy was extended to them whether they were penniless or could pay liberally. All treatment was free and given without any distinction of class, creed, or colour, and anything contributed was voluntary. A hard morning's work, when upward of 200 new cases and over 400 old cases were seen, was bound to fatigue the staff, but Strathearn conserved his energy amazingly well, though it never could have been possible without the watchful care of his wife. Many instances could be related of his prowess and unique methods of professional work, but he could not be persuaded to publish his methods and results. His aim was simplicity in everything—preparation, operation, and after-treatment. There was always a willingness to carry out new procedures after due consideration of their merit, and ophthalmic surgeons from many parts of the world felt humble in his presence. He was known as one of the ten best eye surgeons in the world. There was nothing spectacular about him or "playing to the gallery." He could not be flustered. Finesse was the rule in all his operations. He had an uncanny intuition whether an eye was good for intra-ocular interference or not. Those doctors and nurses who were fortunate enough to train under him will always remember his gentleness, personal interest, enthusiasm, and desire to help the unfortunate ones. His love of music, quiet humour, and "pawky" remarks made him delightful in company, though he was of a retiring nature and hated fuss. Even when he was persuaded to accept his knighthood there was a reticence and desire that friends should forget about it. It was an honour fully merited and gave the greatest pleasure to his many admirers, who knew that it was his sheer merit which won him that recognition. I am certain that those who were intimate with him bless the day they met him, knowing that his character lives on in the lives of so many, professional and lay, who were fortunate to have him as a friend.

Sir ERNEST GRAHAM-LITTLE, M.D., F.R.C.P.

Dame Louise McIlroy and Mr. G. F. Goodchild write: We would like to thank you for the fine and sympathetic obituary notice (October 21, p. 952) you gave of Sir Ernest Graham-Little, one of our most distinguished physicians and an upholder of the highest ethical standards of medical practice. May we, however, be allowed to amend the statement that he won his last parliamentary election by "a very few votes"? A graduate of the University of London had to pay a fee to become a registered member of Convocation, and thus only would he qualify for the vote. Therefore the actual electorate was small in number compared to the graduates represented, and in his last published election address Sir Ernest wrote of having won all "successive elections" since 1924 by "progressively increasing majorities. My majority in my last election was 13 times as large as in my first." In the parliamentary election to which you refer occurred one of the biggest landslides for the Conservative Party and independents known to history, when a wave of Labour supporters and fellow travellers had swept over our universities. Indeed, Sir Ernest's opponent, Mrs. Stocks, was reported in the public press to have boasted that "she hopes to unite the Left . . . from the Liberals to the Communists." The poll in 1945 was particularly small—a mere 15,000-odd—owing to the large numbers of graduates abroad and in the fighting Forces and to other results of the war. However, despite all this, Sir Ernest had a majority which can hardly be described as "a very few votes" when we consider that the present Labour Party came into power by an overall majority one-twenty-fifth of the number by which Sir Ernest Graham-Little won and retained his seat until the university franchise was abolished in the early part of this year.

MAX LOWENBERG, M.D.

Dr. R. T. Brain writes: Dr. Max Lowenberg, who died on November 22, was an eminent refugee dermatologist from Düsseldorf. He had been assistant in the clinic for internal diseases in Frankfurt-am-Main under Professor von Noorden and in the clinic for surgical diseases under Professor Bockenheimer. After specializing, he became chief assistant to Professor Hern in the clinic for skin and venereal diseases of the medical academy in Düsseldorf. Early in the war he came to this country as a refugee, and because of his excellent credentials he was welcomed by Professor R. A. Webb and his colleagues in the pathological department at the Royal Free Hospital. Unfortunately, until he was registered a few years ago, the only work he could be offered was that of a technician, and he settled down very contentedly to the simple tasks of cutting sections. It was a revelation to see so eminent a physician working happily and enthusiastically in this humble role. Dr. Lowenberg was quite deaf, and although he could lip-read spoken German and, astonishingly, learnt to speak good English, our communications with him had to be written. His wide knowledge of dermatology and histopathology was soon appreciated. It is probable that there was no greater authority on the histopathology of the skin in this country, and as soon as his registration could be effected after the war he was appointed senior clinical assistant to the skin department of the Royal Free Hospital, where his help with difficult cases was invaluable. The few of us at the Royal Free Hospital who knew him well regarded our association with him as an outstanding philosophical experience. He had the charm of the old-time gentleman, and his natural modesty and humility merely enhanced his intellectual brilliance. He had a severe attack of angina about a year ago, but he returned to his laboratory with all his old vigour, and none could persuade him to devote less time to the hospital. For some months before his death he seemed to know that it was imminent, but he always hoped that he would die in the laboratory that had afforded him so much interest and hospitality and in which he had made admiring friends of all. His wish was granted.

ADOLF LICHTENSTEIN, M.D.

Professor Adolf Lichtenstein, who was born in Stockholm on November 1, 1884, was on his way to the International Congress in Paediatrics at Zurich last summer when he was taken ill. Two days after his return to Stockholm on July 21 he died of a cerebral thrombosis. He was undoubtedly the outstanding figure in the Scandinavian world of paediatrics at the time of his death. This was so largely because of his tireless energy and enterprise in countless directions within his specialty: during the last three years of his professional life he published some 50 studies either alone or in association with his colleagues. His first important work appeared in 1917 and was concerned with haematological studies of prematurely born infants during the first years of life. In a series of 10 different publications he discussed the subject of scarlatina, its aetiology, prophylaxis, and treatment, and he was among the first to show that the so-called relapses from this disease may be due to reinfections with haemolytic streptococci from recent cases of scarlatina admitted to the same hospital. Applying this hypothesis in practice, he succeeded in reducing the incidence of such cases by individual isolation. Another field in which he was a pioneer was in the treatment of diabetic children, whose strict dieting used to cause much distress. The comparatively free diet he introduced was, in spite of insulin, accompanied by the risk of coma and hypoglycaemia, and it needed all his powers of persuasion and his large series of successfully treated patients to convince his colleagues of the soundness of his, at that time, unorthodox views. In conjunction with Professor Frölich, of Oslo, and Professor Monrad, of Copenhagen, Lichtenstein was the author of the standard textbook on paediatrics for students in the Scandinavian countries. He was also editor of *Acta Pediatrica* since 1946. On his retirement from the chair of paediatrics in Stockholm, this publication appeared as a 687-page Festskrift to which colleagues from the U.S.A., Holland, Switzerland, and Italy, as well as the Scandinavian countries, had contributed.

J. H. VINCENT, M.D.

Professor J. H. Vincent, the eminent French bacteriologist, died in Paris on November 23 at the age of 87.

Jean Hyacinthe Vincent was born at Bordeaux on December 22, 1862, and was educated there and at Paris. He joined the staff of the Val de Grâce Military Hospital in 1896, becoming professor of epidemiology there in 1912. In 1925 he was appointed a professor of the Collège de France, where he worked as director of the laboratory of epidemiology and infectious diseases. He was elected a member of the Académie de Médecine in 1907, and in 1940 was president of the Académie des Sciences, of which he became a member in 1922. Vincent introduced a new method of preparing typhoid-paratyphoid vaccine, which proved its value during the first world war, and his work on antibacterial sera was also fruitful. In 1894 he isolated *Nocardia madurae* (*Actinomyces madurae*), one of the organisms causing Madura foot, and two years later he first described *Borrelia vincentii* and *Fusobacterium plauti-vincenti*, which he found associated with "hospital gangrene." Later he demonstrated these two organisms in ulcero-membranous stomatitis ("Vincent's angina"). He also made important contributions to the knowledge of the aetiology and pathogenesis of tetanus. In clinical medicine Vincent published papers on occipital neuralgia, the relation between thyroid disorders and rheumatism, Graves's disease, scleroderma, and meningitis. He was a foreign honorary fellow of the Royal Society of Medicine.

Dr. H. D. A. UTIDJIAN, who was in practice in Wembley for 21 years, died suddenly at the age of 59 at his home in Kenton, Middlesex, on November 12. He had been forced for the past year by failing health to modify his unsparing services to his patients. Born in Nicosia, Cyprus, of distinguished Armenian parentage, he was educated at the University of Beirut, where he graduated in the equivalent degrees of B.A. and B.Com. He worked with the American Red Cross in 1917–18, and held the posts of medical officer at the Brumana Hospital, Lebanon, and first assistant at the Lebanon Hospital for Mental and Nervous Diseases. He proceeded to the French State Diploma of Doctor of Medicine in 1920 and in the same year came to England, where he studied at University College Hospital, taking the Conjoint qualification in 1922. He practised, always arduously, in the East End and in Kilburn before coming to Wembley. He was an honorary member of the staff of Wembley Hospital throughout his practising years and was made a life member of the British Red Cross Society for his war services as medical officer to a Middlesex detachment. He was a greatly respected member of the Armenian community in England and was prominently identified with the affairs of the Armenian Church. He was chosen to go as the English delegate to the world conference in Soviet Armenia in 1945 for the election of the Catholicos of all Armenians. He was justly proud that his mission, primarily ecclesiastical, yet semi-political, was sponsored at high level by the Foreign Office while England was still at war. He was fluent in many languages and had an expert knowledge of Levantine history, of which he had a comprehensive library. He is survived by a widow, two sons who are medical students, and a daughter who may also follow his calling. The Armenian community in England, and indeed abroad, have suffered a great loss. His Wembley patients will mourn the death of a kindly, sympathetic, and truly devoted family doctor and friend.—R. E. D.

Dr. JOHN RANKIN died at Southport on November 16 at the age of 77. Born near Londonderry, he graduated M.B. at Glasgow University in 1895, and after a short period of practice in Newtownstewart he moved to Drogheda, where in 1908 he found time to take his F.R.C.S.I. He went to Southport in 1909, and worked for 37 years in the Churchtown district of that town, retiring in 1946. He suffered for many years from severe rheumatoid arthritis, and there was a touch of true greatness in the way he rose above this handicap and carried on. He was the ideal general practitioner, accurate in diagnosis, skilled in treatment, and always a personal friend of his patient. He usually had a joke or new story to tell, and his visits alone were a tonic. It was a great privilege as well as a great benefit to work with him.—H. G. M.

Dr. ALEXANDER JOHNSTONE, medical officer of health for Greenock, died suddenly at his home on November 17 at the age of 58. He was born in Aberdeen, and was educated at Aberdeen Grammar School and Aberdeen University, graduating M.A. in 1913, and M.B., Ch.B. in 1915. He proceeded M.D. in 1928. After a short period as house-surgeon in Aberdeen Royal Infirmary, he served from 1916 to 1919 with the R.A.M.C. in Mesopotamia and India, and was awarded the Military Cross. On his return to civilian life he took the D.P.H. in 1920, and was then appointed assistant medical officer of health for the county of Angus—a post which he held for two years. From 1922 to 1927 he was assistant medical officer for the county of Dunbarton. In November, 1927, he was appointed medical officer of health for the burgh of Greenock—a post which he filled with distinction until his death. He held many local appointments, being a member of the local medical committee and the Greenock hospital board and secretary of the Greenock and District Faculty of Medicine. He was also an examiner for the Royal Sanitary Association of Scotland.

H. F. K. writes: It is no easy task to write of Alexander Johnstone. As a friend during the past 23 years of his stay in Greenock I came to appreciate his qualities year by year. He was a typical Aberdonian—friendly, cautious, and energetic. He started his appointment a young man in his prime, and

he soon revealed qualities which made him respected by all who came in contact with him. His many duties included medical officer of the V.D. Clinic and police surgeon of the burgh of Greenock. His one desire was to seek co-operation with the medical practitioners of the town. During the war years he had the task of organizing the first-aid services of the burgh. In this capacity he became known intimately to thousands of the population. Many of the former civil defence workers will remember his nightly visits to their posts from 1939 to 1945, for he always had a cheery and encouraging word for everyone. There is no doubt that these years left their mark on him physically, and Greenock owes him a great debt of gratitude. He was also a prime mover in getting the new Rankin Maternity Hospital built, and this will be a lasting reminder of his efficiency. His many other achievements towards improving the health of the community included the extension of the maternity services, the organization of local arrangements for diphtheria immunization, and the provision of day nurseries. He was always anxious to consult the general practitioners before introducing anything new, and this co-operation with us was a feature of his tenure of office. His staff were devoted to him, and they appreciated his loyalty towards them. We feel his loss greatly as a medical officer of health, a friend, and secretary of the Faculty. We respected his integrity, admired his industry, and loved him as a man. He is survived by his wife, who shared with him the appreciation of all who came in contact with them.

Dr. HENRY JOHN MACEVOY, who practised for many years in North London, died in Sticklepath, Devon, on November 17, aged 87. The earliest years of his long life were spent in France—his spiritual home. He went to school there as a young boy, but he was eventually sent to England to attend an English school. Much of his wide knowledge and logical mentality sprang from his French sympathies, and he was deeply versed in French history and literature. Before taking up the study of medicine at St. Thomas's Hospital he obtained the B.Sc.(London) with honours in 1883. He qualified in 1886 and graduated M.B. with honours in medicine in 1888. A year later he proceeded M.D. At St. Thomas's Macevoy was house-physician to Dr. Ord just at the time when Ord was working out the aetiology of myxoedema and establishing it as an entity, the honour for which he shared with Sir William Gull. Macevoy also distinguished himself at athletics, winning the inter-hospital 100 yards on at least two occasions. He continued his post-graduate studies in Paris, where he attended the lectures of Dr. G. Dieulafoy and Professor Charcot, whose theatrical displays with hysterical patients and hypnotic demonstrations he witnessed. Later he settled down in practice in Brondesbury. For many years he took an active part in the affairs of the B.M.A., having been an ex-chairman of the Willesden and Hampstead Divisions and an ex-vice-president of the Metropolitan Counties Branch.

J. L. M. writes: Macevoy was an original member of a most flourishing and friendly little medical club, the Priory Medical Society, to which I was admitted in 1895. About 15 of us met every fortnight at one another's houses, and the cases we were able to show were drawn from every class, rich and poor. Macevoy was a remarkably wise, able, and experienced doctor, not without strong opinions and prejudices. His consultations with the physicians and surgeons of his time were sometimes more controversial than usual, since when he did not agree he said so, and I think some famous specialists were careful "to pull up their socks" when going to meet Macevoy again after a first encounter. His opinion on mental cases was particularly valuable. He was always interested in myxoedema, and if he saw an obvious case of this disease in the street or in a shop he could not refrain from engaging the woman in conversation, and if her condition had been until then unrecognized and untreated he would find out the name of her doctor and give him a kindly hint about the nature of her trouble. As an obstetrician he had the complete confidence of his medical neighbours, who often sought his help with difficult confinements. Besides his professional work he had many other interests. His botanical knowledge was great, and he loved wild flowers. This was one of the great interests of his old age after he went to live in Devonshire: he was a familiar figure as he stood gazing into the hedgerows. His mental activity and power seemed quite unimpaired to the end of his life, and except when he was listening to music his mind seemed always to be actively at work. With his wide background of experience and knowledge he was an ornament to his profession.

C. H. H. writes: It cannot be the good fortune of many practitioners to be able to boast of a friendship lasting between two of them for 50 years. My friendship with H. J. Macevoy began in a meeting of medical men in one of the suburbs of London. He was typically a Frenchman, and, be it said, a non-believer in the Englishman's traditional superiority. "He is too lazy," was one of his favourite sayings. Macevoy was always keen to show his deep knowledge of French clinical medicine to a few of his friends. "Creative evolution" was his answer to many of the problems of thought; the absolute that many would lightly suggest found little favour with him. An independent thinker upon most things, he was a most careful seeker after the truth. His friendship was something to be treasured.

Dr. G. A. JONES, who was for many years anaesthetist to the Samaritan Free Hospital for Women and to the Grosvenor Hospital for Women and Children, died at Beaconsfield on November 21. He was the son of an Essex clergyman, and his younger brother was the late Lawrence Jones, F.R.C.S., who died in July, 1949. George Arthur Jones was educated at St. Paul's School, Oxford University, and St. George's Hospital. He took an arts degree at Oxford before studying medicine. He qualified L.S.A. in 1902, and after holding house appointments at St. George's Hospital he took up anaesthetics as a specialty. Like his brother, with whom he lived for many years, he was of an essentially modest and unassuming disposition; this endeared him to very many friends.—H. R.

By the death of Dr. JOHN BROADLEY on November 24 at the age of 76 Sheffield has lost a well-known member of the medical profession. He was born at Keighley and educated at the local grammar school. He entered the medical school at Leeds in 1891 and obtained the M.B. degree of the University of London in 1897 as an external student. After holding a resident appointment as house-surgeon in the Leeds General Infirmary, he decided to widen his experience by acting as a locumtenent in the district, and for a time he was an assistant to a general practitioner in Wakefield. In 1900, having developed a liking for surgery, he became a house-surgeon in the ear, nose, and throat department of the Leeds General Infirmary, and in 1901 came to the Royal Infirmary, Sheffield, as a house-surgeon. Later he held the post of resident surgical officer for a year. In 1902 he obtained the diploma of F.R.C.S. (Edinburgh) and in 1903 the degree of B.S. of the University of London. He began general practice in Sheffield in 1903, and when the University of Leeds in 1905 obtained its charter to grant its own medical degrees he immediately graduated M.B., Ch.B. at that university. While in practice as a general practitioner he did most of the operations required by his patients, and in 1909 he was appointed an honorary surgeon to the Children's Hospital in Sheffield. He retained this post until 1935, when he retired, having reached the age limit. He was also for many years honorary medical officer of the *x*-ray and electrical department. At the outbreak of the first world war he joined the R.A.M.C. and served on the staff of the 3rd Northern General Hospital. In 1917 he went to France, being attached to the 59th General Hospital at St. Omer. He was awarded the King Albert Medal for his work there.

E. F. writes: John Broadley was an outstanding example of a type of practitioner who is rapidly disappearing—the competent, efficient, and well-read general-practitioner surgeon. Under the National Health Service this type will soon be a thing of the past, but it should be understood that these men played a very important part in the evolution of modern surgery. They probably practised more pure medicine than operative surgery, and it was this which gave them such a wide outlook. They

knew full well their limitations and were never too proud to ask for help from others with more experience in particular surgical procedures. Broadley was appointed to the surgical staff of the Sheffield Children's Hospital at a crucial time in its development, and the position it holds to-day in the paediatric world is due in no small degree to his self-sacrificing work there. During the first world war he did much for the wounded and sick, both before and after the period of his service abroad. The men had, like his own patients, the greatest confidence in his skill as a surgeon, and this was supplemented by his kindliness and humane attitude in treating their disabilities. In all his dealings with colleagues and patients he had the same, perhaps sometimes blunt, but always straightforward method of approach which he had inherited from his Yorkshire forebears. This was very noticeable in his treatment of injured miners and colliery workers whom he examined for the Yorkshire Coal Owners' Federation. Many owe much to his sympathetic but firm handling of their case. He will be missed by them as he will be by his former patients, friends, and colleagues, who sympathize with his widow and two daughters in their loss.

Dr. JAMES LESLIE BARFORD died suddenly on November 29, after a brief illness, in Redhill County Hospital, at the age of 67. The fourth son of Dr. James Gale Barford, who was the first medical officer to Wellington College, he was educated at Epsom College and King's College Hospital, where he was house-surgeon to the late Mr. Barrow. He qualified M.R.C.S., L.R.C.P. in 1905, and almost immediately entered the Royal Navy, in which he served till 1919, becoming the youngest surgeon-commander in the Service at the end of the first world war. He then transferred to the Merchant Navy, serving for many years, mainly with the P. and O. line, and travelling to most parts of the world. Later he became interested in mental health, and worked as a locumtenent at mental hospitals in Lincoln and Ipswich. In 1938 he became assistant medical officer at the Royal Earlswood Institution, and, a year later, at the comparatively late age of 56, he took the D.P.M. During the second world war he was medical officer to the Surrey County Council civil defence organization, to which he devoted characteristic enthusiasm and ingenuity in planning and in the teaching of first aid. In 1946 he spent nine months in the Antarctic with the first post-war whaling expedition to leave this country, as medical officer to s.s. *Southern Venturer,* and he carried out much research into the collection and large-scale manufacture of various glandular products. On his return his desire for adventure soon reasserted itself and he joined the Post Office telegraph department as medical officer on H.M. Telegraph Ship *Alert* and later on H.M.T.S. *Monarch.* Barlow remained a bachelor, and during his varied career he made great numbers of friends in all countries and walks of life. He had a special delight in the company of youth, on whom he was an unfailing influence for good. Often whimsical, with a constant sense of humour and possessed of a certain literary gift, he made several original and refreshing contributions to the pages of this *Journal.*—F. J. C.

Professor EMIL ABDERHALDEN, known throughout the world for his physiological research, died in Zurich on August 5 aged 74 after a cerebral haemorrhage. He was born on March 9, 1877, the son of a Swiss schoolmaster. He studied medicine in Basle, and, after receiving his doctorate in 1902, he went to Berlin to work with Professor Emil Fischer on protein chemistry. His earliest important publication appeared in 1904 and was a complete scientific bibliography on alcohol and alcoholism. He himself was an ardent worker for temperance. His book on physiological chemistry proved extremely popular, running through 26 editions in 42 years. He worked on protein chemistry, digestion, and enzymes from 1902 to 1908. He became a professor in 1908 and followed Munk at the Veterinary University in Berlin. In 1909 he started editing the immense *Handbuch der biologischen Arbeitsmethoden.* He was appointed to the chair of physiology in Halle in 1911, and won the Helmholtz Prize in 1913. From this time dates his interest in mental hygiene and social problems. He founded a children's hospital in 1915, and interested himself in the smallholding movement. He was also active in sending undernourished German children to Switzerland after the 1914–18 war. In 1921 the Swedish Medical Association gave him the Berzelius Medal. He founded two journals, one on enzyme research and one on ethics. In the autumn of 1945 he and his family were obliged to leave Halle and return to Switzerland, where he became emeritus professor in Zurich. He was a modest and deeply religious person, a clear thinker, and a born teacher. He is said to have dictated his entire *Textbook of Physiological Chemistry,* together with the references, from memory.

Medical Notes in Parliament

Kingston Dispute

On December 7 Mr. J. BOYD-CARPENTER asked Mr. Bevan whether he had considered the proposal of the British Medical Association that a public inquiry be held in connexion with the dispute over the future use of the Kingston Victoria Hospital; and what action he proposed to take.

Mr. A. BEVAN said the future of this hospital had been fully and carefully reviewed, both by the regional board and by his own Department, and had been the subject of a debate in the House. He certainly did not think that the proposed inquiry would either be appropriate or add to their knowledge, and he saw no reason to intervene.

Mr. BOYD-CARPENTER pointed out that no opportunity had been given for local opinion to express itself directly to those responsible.

Mr. BEVAN said he did not believe that any better court of inquiry existed in Great Britain than the House of Commons on a matter of this kind.

Mr. SOMERVILLE HASTINGS asked whether Mr. Bevan agreed that in hospital management the opinion of experts was more important than local opinion.

Mr. BEVAN said that was the view which had been taken by the management committee and the regional hospital board with all the facts before them. If this matter had not been sufficiently ventilated he would be happy to recount these facts again.

Colonel M. STODDART-SCOTT asked whether it was true that Mr. Bevan, during the passage of the National Health Service Bill, had again and again advocated the establishment of general-practitioner hospitals, but that ever since the passage of the Act he had closed one general-practitioner hospital after another.

Mr. BEVAN said this statement was as prejudiced and inaccurate as most of Colonel Stoddart-Scott's statements.

Mr. BOYD-CARPENTER gave notice that he would raise the matter again.

River Pollution

Mr. ANEURIN BEVAN, on November 27, moved the second reading of the Rivers (Prevention of Pollution) Bill founded on the agreed report of the expert Central Water Advisory Committee. Their main object was to make a survey of the rivers and to lay down standards, and the river boards would be advised by technical bodies on the degree of purification which they could reasonably demand for particular effluents. The technical knowledge of how to control industrial effluents was in its infancy, and protection of rivers and streams would have to be done gradually over the years.

Mr. WALTER ELLIOT said the Bill really attempted to define under what conditions rivers could be polluted.

After some debate on individual rivers Mr. JOHN MORRISON said that, with some of the modern spraying chemicals, pollution from farm drainage might in future be important.

Sir HUGH LUCAS-TOOTH asked what the Government intended to do about pollution by cottagers in rural neighbourhoods who simply upset their sewage into the river.

Mr. A. BLENKINSOP said that the Ministry expected that a series of standards would be laid down for the different reaches of the rivers, and in each case there would be a gradual improvement. Under the Bill it would be possible to apply the

definition of a stream to the tidal reaches of a river without having to establish a connexion between public health and the amount of polluting matter in the water.

The Bill was read a second time without a division.

Domiciliary Physiotherapy

Mr. KENNETH THOMPSON on December 4 raised the need for domiciliary physiotherapy services. Some people for whom the treatment was prescribed, such as sufferers from cardiac complications, heart disease, old age, and advancing infirmity, could not attend hospitals and clinics where the regional hospital boards provided physiotherapy. Several regions had contractual arrangements with district nursing associations and private practitioners to take the service to such patients. All these regions now appeared to have received instructions to terminate the contracts, and had been told that

> The shortage of adequate trained personnel, which will continue for an indefinite period, makes it imperative to concentrate them in hospital departments.

He had found no clear statement of whether this was to secure the fullest use of skill in short supply, or to ensure that the patient received adequate treatment, or on the grounds of economy. Physiotherapists would in all probability continue in the service of the nursing associations and would be used less rather than more after the instruction was put into operation. The Ministry of Health had declared that the system of contracting with other agencies had proved to be expensive, but Mr. Thompson said that in Liverpool it cost the board not more than 9s. a treatment. In another part of the country the cost to the board was 11s., and in a third 14s. He asked if the Minister wanted the House to believe that any system he could establish would provide treatment at a lower cost than that. The cost of transport of a patient to hospital in an ambulance was about 20s. a trip. The regions should be entitled to decide a matter like this themselves, and, where they could arrange an efficient and inexpensive service, should not be subject to this kind of blanket instruction.

Mr. A. BLENKINSOP, replying for the Ministry, said their chief concern was with the welfare of the patient. Those who on medical grounds required physiotherapy in their homes would continue to receive it, but he had to insist that physiotherapy provided in the home was a poor second-best to that provided in the medical surroundings of a hospital or clinic properly fitted out for the purpose. With old people the important question was to give active treatment, and not to let it be regarded as a natural part of the life of the patient. That was the great danger with treatment at home, which few old people needed. It was obvious that the amount of equipment which could be provided with a domiciliary team was limited compared with provision in hospital. It was not economical that trained staff should wander about the country giving individual treatment instead of providing treatment for several patients together in a clinic. The experience of the Ministry had been that when contracts of the sort under discussion had been made, whether with an organization or with individual physiotherapists, there was a danger of a gradual growth of demand which could not properly be regarded as medical. The Ministry was concerned not merely with sifting out those who could be regarded in the initial stages as medical cases, but also with ensuring that it had a reasonable control over how long the treatment continued. The difficulty with domiciliary treatment was that it tended to become permanent, instead of being a method of ensuring that patients could later go to a hospital for treatment, which would be much better for them. Discussions were going on with the regional boards to work out ways in which the problem could be overcome, either by use of existing hospital staff or by appointments of part-time or full-time physiotherapists. If that should prove impossible, the Ministry would look into the matter again, to ensure that the service was provided for those who really needed it.

Pneumoconiosis

At the close of a debate on Welsh affairs in the House of Commons on December 5, Mr. NESS EDWARDS said that 6,000 sufferers had gone back to the pits, and they complained that if they became worse they could not get increased compensation. He was authorized to say that Dr. Edith Summerskill had consulted the Industrial Injuries Advisory Council and was willing to make regulations to enable these men to get Industrial Injuries benefit.

Mr. EMRYS ROBERTS asked whether this would apply to slate quarries.

Mr. NESS EDWARDS said that if the concession came under the general Industrial Injuries Regulations he imagined it would, but a question should be put on the subject to Dr. Summerskill. He believed that under the auspices of the Ministry of Fuel and Power a new method of extracting the dust had been devised, and they hoped the quarries would introduce these new methods and conquer the fear of pneumoconiosis among slate-quarry workers.

Among 32,000 unemployed in South Wales 10,000 were disabled workers, and one-third of these were pneumoconiosis cases. In the last five years 15,000 men had left the mines with pneumoconiosis, and, in spite of all the efforts to get these men into employment, more were getting on to the unemployment register.

Central Buying for Hospitals

Mr. A. BEVAN, in reply to a question on December 7, stated that central contracts were placed for *x*-ray equipment and films, laboratory and blood transfusion apparatus, spectacles, rubber goods, and certain scarce and costly drugs. Hearing-aids were purchased under contract by the Post Office, surgical and orthopaedic appliances by the Ministry of Pensions, and occupational therapy equipment and invalid tricycles by the Ministry of Works. He added that he intended, as soon as practicable, to extend these arrangements to cleaning materials and hardware, bedding, cotton and woollen textiles, drugs and dressings, and other common-user goods. Net savings could not be precisely calculated, but were not less than £2½m. to £3m.

Registrars

Mr. A. BEVAN on December 7 said that he had suggested to hospital boards a transfer system whereby registrars of non-teaching hospitals would spend a portion of their training period at teaching hospitals and vice versa.

Mr. NIGEL DAVIES pointed out on December 7 that, whereas Mr. Bevan had proposed that the number of hospital registrars and senior registrars in England and Wales should be cut from 2,800 to 1,700, it was proposed that the cut in the North-east Metropolitan Region should be from approximately 300 to 134.

Mr. BEVAN replied that the reduced number represented the share of the total which he thought appropriate to that region, taking into account its population, the number of consultants, the available training facilities, and the number of beds there compared with the country as a whole. In the South-west Metropolitan Region there were about 320 senior registrars and 320 hospital registrars (including teaching hospitals), and the new establishments were to be 83 and 151 respectively.

The Capitation Fee

In reply to a question on December 7 Mr. A. BEVAN replied that he had always preferred the idea of a graduated system, with a higher capitation rate for the first 1,000 or so patients on the doctor's list. This would discourage the accumulation of over-large lists and encourage the better-balanced practices. It was not always easy to translate idea into fact; he wanted to go into it very thoroughly with the profession.

Smallpox.—Figures in the Registrar-General's Weekly Returns relate to original notifications, though the disease may afterwards be shown not to be smallpox. Figures in the Registrar-General's other publications relate to corrected notifications.

Diphtheria.—The numbers of original notifications of diphtheria in 1947, 1948, and 1949 were 10,465, 8,035, and 4,982 respectively; after correction they were 5,592, 3,560, and 1,881.

Gifts to Hospitals.—Where the benefit of a gratuitous covenant in favour of a named hospital has been transferred under the National Health Service Act, 1946, to the Hospital Endowments Fund the

distribution of money is regulated by statute and the Minister of Health has no power to vary it by a direction. Hospital management committees should have regard to the original intention of the gift in the use made of their shares.

Clean Food.—The Minister of Food announced that up to November 17 he had confirmed model by-laws governing cleanliness in the handling, wrapping, and delivery of food for 973 authorities, and was shortly to do likewise for a further 260; but 211 authorities were still outstanding.

Exemption from National Service.—Men exempt on medical grounds (excluding men not examined, because blind, etc.) in 1946 numbered 39,964; in 1947, 24,648; in 1948, 24,711; in 1949, 33,818; in 1950 (to September 28), 34,506.

Housing.—In Liverpool 27,328 houses are classified by the Liverpool medical officer of health as unfit for human habitation.

Medico-Legal

DEATH DUE TO A SWAB

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

In spite of the strict precautions taken in all operating theatres, now and again a swab still eludes the vigilance of the team. In a recent case the victim was a girl aged 2 who was brought into the Warwick Hospital for an emergency operation to relieve torsion of a dermoid cyst in the region of the left ovary. She made a good recovery and was sent back in due course to the sanatorium from which she had been admitted, where she was under treatment for advanced tuberculosis of the lungs. About 11 weeks afterwards she was readmitted for abdominal pain and vomiting. A tumour was palpable in the mid-abdominal region, but radiography gave no assistance in diagnosis. There was no evidence of obstruction. She settled down very rapidly, and, in view of the tuberculosis and the finding at the operation of enlarged mesenteric glands, the surgeon thought that her symptoms might be due to a plastic tuberculous peritonitis with further enlargement of the glands. He therefore decided to observe her and treat her conservatively. She continued to improve up to the fourth day after admission, when she suddenly collapsed and died. At necropsy the palpable mass in the abdomen was found to be a swab which had become encysted and adherent to a loop of small bowel.

The case was therefore reported to the coroner, who held an inquest on August 29. The surgical registrar who performed the operation said that great care was always taken over the counting of swabs both before use and after the closing of the abdominal cavity. He might, on account of the child's small size, have used a "large six" swab as a pack instead of an ordinary pack, but even so it should have been counted with the other swabs. He maintained that, when the child was brought in for the second time, there had been no evidence of obstruction, and the diagnosis of the condition as a result of her tuberculosis was clinically right. The theatre sister explained in evidence that large swabs ("big sixes") were counted before and after an operation; small swabs were not counted but were always used on a holder. The night, however, had been hot, and the surgeon might have had to have his brow wiped. If this were done with an unsterilized swab it might have been picked up and included in the count. The theatre technician, whose task had been to check the swabs, described how an operation was usually begun with 24 "big sixes" and two abdominal packs, which were all checked. During the operation it was his custom to collect all the used swabs and lay them in a special rack until six were used; those were then taken out of the rack, placed in a bucket, and marked off on the graph which he used for keeping the count. If extra swabs were taken into use they also were marked on the graph. He was certain that the routine had been observed on that occasion. It was his duty to wipe the surgeon's brow, which he did with an unsterile swab which he would put into his pocket.

The jury found that the little girl had died from intestinal obstruction by a surgical swab inadvertently left in the abdomen during the operation. They added two riders: (1) that thought should be given by the hospital authorities to devising a scheme by which swabs used for packing could be recorded and recovered, and (2) that a record should be kept by the hospital of all the persons engaged in an operation.

In a letter to the senior officer of the Birmingham Regional Board the acting deputy coroner, Mr. L. D. Overell, suggested that in their first rider the jury might have been referring to the possible use of a "big six" as a pack, and have considered it desirable for any material used for packing to be quite distinct from ordinary dressings. The second rider referred to an uncertainty in regard to the identity of the assistant to the theatre sister, which had caused an adjournment. The surgeon, he added, had immediately given instructions that in future some quite different material, which could not be mistaken for a dressing, should always be used for wiping the surgeon's brow. The coroner went on to say that all the usual routine drill to prevent a mishap of this kind appeared to be in operation at the Warwick Hospital; but he expressed the personal opinion that, as quite well educated persons were frequently faulty in arithmetic, such an accident could easily be due to a failure by a harassed theatre sister to add correctly the numbers of the used and the unused swabs. Whether this or the use of a swab for the surgeon's brow is the true explanation, this case has pointed to another possible source of what is fortunately an extremely rare mishap.

Universities and Colleges

UNIVERSITY OF OXFORD

The Weldon Memorial Prize for 1950 has been awarded to Lionel Sharples Penrose, M.D., Galton Professor of Eugenics, University College, London.

UNIVERSITY OF CAMBRIDGE

In Congregation on December 2 the following degrees were conferred:

M.A.—Oswald Lloyd, M.D., F.R.C.S., M.R.C.O.G., Associate Lecturer in the Faculty of Medicine.

M.D.—P. Sainsbury, G. M. Fleming, W. L. Calnan, H. Butler.

M.B., B.CHIR.—*Ion-Dan Edeleanu.

A Grace recommending the conferment of the degree of M.A. upon Janet E. Bottomley, M.D., F.R.C.S., M.R.C.O.G., Associate Lecturer in the Faculty of Medicine, passed the Senate on December 2.

*By proxy.

UNIVERSITY OF GLASGOW

On December 1 the degree of Ph.D. was confirmed *in absentia* by diploma upon C. Mukherjee, M.B., Ch.B.

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—[1 3]D. Burman, [1 6]M. W. Cemlyn-Jones, [1 3]P. J. Chapman, [1 2 5]S. S. Epstein, [1 5]D. I. Fryer, [1 7]L. G. Goodwin, [1 5]P. E. B. Holmes, [1 4]C. B. Ingor-Willey, [1 3]R. P. V. Jayewardene, [1 5]R. S. Jelliffe, [1 2 4 5 6 7]D. J. Jenden (*University Medal*), [1 6]N. MacDonald, [1 5]F. W. O'Grady, [1 3]T. H. Roffe, [1 6]M. K. Sawday, [1 6]G. Walker, R. G. Adams, D. G. E. Alldridge, J. D. B. Andrews, B. Bass, D. A. Begg, Marion Berry, C. N. Best, Margaret E. Beynon, N. P. Bhandari, Irene F. A. Blakeney, A. G. Blyth, Elizabeth M. Bough, J. Ll. Bowen, Betty B. Boxall, T. L. Bradbeer, C. J. Bradfield, Yvonne J. Bradfield, R. O. Brettell, J. E. Bridger, W. V. Brooks, D. E. Brown, O. F. Brown, K. M. Bryant, N. L. Bucky, M. G. Budden, S. H. Burges, Patricia M. Bushell, R. P. Butt, G. Canti, R. J. A. Carey, S. J. Carne, W. I. Carter, P. J. Chesterman, J. W. Cieszynski, P. H. Cima, D. A. Clements, N. F. Cockett, R. A. Cocks, R. F. Coggins, Sheila D. Cooper, C. H. Corby, A. H. Cox, Elizabeth P. Cracroft, A. J. I. Dacre, Mary G. C. A. Dale, R. A. Davidson, Aldwyth H. Davies, J. W. Davies, W. H. G. Davies, J. G. Dawe, Geva B. P. de Winton, P. L. C. Diggory, S. Dische, F. B. Dobbs, Winifred B. Drew, B. H. Du Heaume, W. R. Edwards, Alison M. M. Fleming, N. S. Galbraith, O. P. Galpin, M. F. Gardiner, F. P. A. Garton, Angela M. Geere, M. J. Gilkes, D. Goldman, A. M. Goldstein, Edwina R. Goodall, Helen

Gordon, R. Goulding, J. Gower, B. P. Green, C. R. Greenacre, E. J. Griffiths, P. W. W. Griffiths, S. Hacking, Antoinette I. Hallett, C. P. Handforth, H. R. Hewitt, P. G. Higgins, June R. Hill, R. R. W. Hill, R. F. H. Horn, H. Horwitz, B. J. Hovenden, J. G. Howard, St. C. M. L'A. Hubbard, E. R. Huehns, F. T. Hunt, Sylvia R. Ingold, Diana H. Ireland-Jones, M. C. H. Jackson, Elsie S. Jaikaran, Brenda James, G. C. Jenkins, F. G. Johnson, M. H. F. Johnson, D. R. Jones, R. J. B. H. Jones, Ann Kiln, A. E. Kingston, G. W. Korn, E. B. Kraus, A. C. K. Lawrence, D. A. Lawrence, J. J. Lesser, S. Liu, J. W. McCloy, D. H. McFerren, K. A. McNeill, I. J. MacQueen, G. W. Marsh, Nancy A. H. Marston, J. A. M. Martin, M. Mason, Jennie C. Maurice-Jones, A. R. May, A. Melinek, A. L. Miller, J. Minnis, C. Molloy, D. Montague Jackson, Margaret C. R. Moore, Doreen P. Morgan, P. D. Moyes, A. R. Moynahan, D. J. F. Munro, R. W. Nash, B. E. C. Nordin, S. F. Oakenfull, K. J. O'Connor, A. L. C. Packham, H. J. G. Palmer, Kathleen M. Parker, Mary Parsons, J. K. Paterson, Dina Patuk, D. L. Pedersen, R. D. Peduzzi, J. R. P. Pegg, H. F. Pile, J. D. Pollitt, W. E. B. Preston, C. F. G. Prideaux, K. G. Prior, Rebe S. Rainsbury, J. H. Reading, Doreen M. Reside, Mary Rhoderick, G. A. Roberts, Margaret E. Robson, I. Rocker, E. H. Roffey, J. K. Ross, P. W. Ruggles, R. H. B. Sacks, Barbara J. Salisbury, J. F. Santer, J. N. McM. Schofield, J. Scorey, W. C. Scott, D. I. Segall, S. A. Seligman, S. J. G. Semple, Pauline M. Seymour-Cole, I. M. Sharpe, E. M. Shipsey, Isabel G. Smith, D. P. Smyly, R. S. Somers, T. Spiro, V. Stanhill, C. Steer, F. P. Stephens, P. B. Stewart, K. H. Stone, L. R. Sweetman, P. K. Sylvester, Gwendolyn R. Tapp, P. K. Thomas, D. J. G. Tilley, W. L. Timmins, J. A. Tottle, A. F. Tuohy, C. L. Tutty, Lilian S. Underhill, J. Vaccaro, R. Vickers, M. H. Vickery, F. H. Walker, I. H. Wallington, A. V. Watts, T. P. S. Watts, D. M. Webster, R. H. C. Wells, Mary F. West, E. J. Williams, J. Ll. Williams, F. P. Willis, M. L. N. Willoughby, M. A. Wilson, H. Windschauer, M. Wise, M. E. Y. York-Moore, J. P. W. Young, T. M. Young.

[1]With honours. [2]Distinguished in pathology. [3]Distinguished in hygiene and forensic medicine. [4]Distinguished in medicine. [5]Distinguished in applied pharmacology and therapeutics. [6]Distinguished in surgery. [7]Distinguished in obstetrics and gynaecology.

UNIVERSITY OF BIRMINGHAM

In the *Journal* of December 2 (p. 1286) we announced the appointment of Mr. Alexander Innes as University Lecturer in Minor Operative Surgery. The announcement should have read that Mr. Innes has *resigned* from the post.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At the annual meeting of the College held on November 30, with the President, Sir David K. Henderson, in the chair, the following were elected to the Council: Dr. W. A. Alexander, Dr. D. J. A. Kerr, Dr. D. N. Nicholson, Dr. R. M. Murray-Lyon, Dr. J. G. M. Hamilton, Dr. T. Anderson.

Sir David Henderson was re-elected President for the ensuing year and Dr. Alexander was re-elected Vice-president.

At a meeting of Council held on December 5, the following were elected office-bearers for the ensuing year: *Trustees*, The Treasurer, Dr. A. Fergus Hewat, Dr. W. D. D. Small, Professor Thomas Ferguson, Mr. I. Simson Hall; *Treasurer*, Dr. J. Alastair Bruce; *Secretary and Registrar*, Dr. J. Halliday Croom; *Honorary Librarian*, Professor D. M. Lyon.

CONJOINT BOARD OF IRELAND

The following candidates were duly admitted licentiates in medicine and midwifery on December 1, having passed the final examination in medicine, surgery, and midwifery of the Conjoint Board of Ireland: Eleanor A. Bolger, Alice Boushel, J. P. Cahill, James Connolly, Dorothy J. Davis, M. J. Foley, Carmel P. Gibson, V. J. Haslan, Mabel Jackson, Sheila Moriarty, Mary J. McCann, Helena M. McManus, M. P. McPartlin, Maureen B. O'Gorman, A. P. O'Kelly, M. P. O'Reilly, Sheelah K. O'Shea, R. A. Power, S. J. Raverty, A. Rudnick, W. E. Rutherford, Dympna E. Sharkey, W. S. Snow, C. M. Watson, Avril M. Webb, J. R. White, J. E. Whyte, C. E. Wilson.

The Services

The *London Gazette* has announced the appointment as M.B.E. (Military Division) to Temporary Surgeon Lieutenant-Commander D. S. Macphail, R.N.V.R., for courage, skill, and determination when he was dropped by parachute into Yugoslavia in May, 1944, and, in spite of the very primitive conditions and the scarcity of medical supplies, established a hospital for the Partisans.

Medical News

Plan for New Medical Centre

London University has just acquired property in Bloomsbury at the corner of Guilford Street and Millman Street almost opposite London House, the hostel for postgraduate students from the Dominions, and hopes to build there, as soon as circumstances permit, a headquarters for the British Postgraduate Medical Federation. This new centre will be within easy reach of the Institutes of Neurology in Queen Square, of Child Health in Great Ormond Street, of Ophthalmology in Judd Street, and of Laryngology and Otology in Gray's Inn Road, and will probably contain a refectory and common-rooms and be a social as well as an administrative centre.

A Medical Christmas Present

The last 50 years have seen astounding developments in medicine and surgery, in public health, and in medical administration. In a well-designed book of 330 pages, in an attractive dust-jacket and beautifully bound in red cloth boards with gold lettering on the spine, the articles on "Fifty Years of Medicine" which appeared originally in the special issue of the *British Medical Journal* for January 7, 1950, have now been reprinted. There are over 300 text pages, a 16-page index, and 32 pages of illustrations on art paper, and the price is 15s. through booksellers, or post free from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

Chelsea Clinical Society

The second meeting of the session was held on November 14, at the South Kensington Hotel, with the president, Mr. Geoffrey Parker, in the chair, when Mr. Dickson Wright, M.S., F.R.C.S., showed a series of films from the B.M.A. library: "Radioactive Isotopes in Cancer of the Thyroid," "Thrombosis and Embolism," "Infections of the Hands," and "Total Retro-Pleural Sympathectomy for Relief of Hypertension."

Medical Films for Pathologists

In 1946 the Scientific Film Association issued a *Catalogue of Medical Films*, which has now long been sold out. While a new edition is in preparation, the association is issuing up-to-date interim lists of films on special subjects. A list of films for nurses is on the way, and a list of *Films of Interest to Pathologists* (publication 60) is now available, price 2s. 6d., from 4, Great Russell Street, London, W.C.1, or 16–17, Woodside Terrace, Glasgow, C.3.

Cortisone Summary

Some 90 papers on cortisone and A.C.T.H., mostly published this year in British or American journals, have been summarized conveniently in a 48-page booklet just issued by the Empire Rheumatism Council from Tavistock House, Tavistock Square, London, W.C.1, price 5s.

Centenary of Bernhard Baron

December 5 was the hundredth anniversary of the birth of Bernhard Baron, and also marked the end of the distribution of the funds of the two charitable trusts he founded, in accordance with his order that all money must be given away within 20 years of foundation. In addition to orphanages, homes for cripples and old people, and institutions for the blind, many hospitals have benefited from large gifts, including the Middlesex (£61,000), which has a wing named after him, Queen Charlotte's (£75,000), and the Hospital for Sick Children (£14,000). The Royal College of Obstetricians and Gynaecologists received £10,000 for a travelling scholarship and the Royal College of Surgeons £70,000 to establish research laboratories and a professorship. In all £1,625,922 has been distributed to many hundreds of institutions not supported by the State or local rates. A maximum of one-quarter of one fund, and one-fifth of the other, have been devoted to Jewish charities, as the

donor laid down. At his death in 1929 Baron's estate was worth nearly £5m., while during his life he had given away about £2m. in charity. This wealth came primarily from the manufacture and sale of cigarettes, in particular from his firm, Carreras Ltd.

Baron was born in Russia of Jewish parents, and moved as a boy to the United States where he got work in a New York tobacco factory just at the time when cigarettes were first devised. After various early misfortunes, including the loss of his savings in a bank failure in 1874, he began to prosper with a cigar factory in Baltimore, and from 1890 to 1895 was managing director of the National Cigarette Tobacco Company of New York. During this time he invented a cigarette-making machine, and when he came to England in 1895 he formed his own company to exploit its use. To sell his cigarettes in competition with the Imperial Tobacco Company, he bought the small London tobacco business of J. J. Carreras in 1903, and built it up to its present large and wealthy form.

Jordan Medical Journal

This first medical periodical to be published in the Hashimite Kingdom of the Jordan will include papers in English and Arabic, and will appear six times a year. The editor is Dr. Wasif Kana'an, P.O. Box 256, Amman, Jordan.

In Brief

Professor R. E. Lane, M.D., F.R.C.P. (Nuffield professor of occupational health in the University of Manchester), Professor J. M. Mackintosh, M.D., F.R.C.P. (professor of public health, University of London), and Sir Hugh E. Griffiths, C.B.E., F.R.C.S. (a consulting surgeon), are the medical members of the Industrial Injuries Advisory Council.

Professor Ange Catacuzinos, director of the neuro-psychiatry unit at the Evangelismos and Pammakaristos Hospitals in Athens, is in Britain, December 3–19, and is lecturing at the National Hospital, Queen Square, London, W.C.1.

The Secretary of State for Scotland has appointed Mr. James South, senior partner of an Inverness firm of solicitors, to be chairman of the Northern Regional Hospital Board.

Dr. H. Gardiner Hill has been elected president and Dr. J. G. H. McNabb captain for the 1951 season of the Medical Golfing Society.

Wills

Dr. George Taylor, of Coldingham, Berwickshire, late of Edinburgh, left £21,132; Dr. James Lyons, late police surgeon in Lincoln, left £23,835; Mr. Howard Stevenson, of Belfast, a former member of the Northern Ireland Parliament, left estate in Great Britain and personal estate in Northern Ireland valued at £9,266; Mr. M. T. Williams, of Aberystwyth, £34,372; Dr. H. G. Stacey, of Harrogate, formerly in practice in Leeds, £19,184; Dr. E. C. Carter, of Enfield, £69,801.

COMING EVENTS

Franco-Anglo-American Medical Society

A business meeting will be held on Tuesday, December 19, at 2.30 p.m., at 11, Chandos Street, Cavendish Square, London, W.1.

Association of Clinical Pathologists

The winter meeting of the Association of Clinical Pathologists will be held at Westminster Hospital, London, S.W., on January 25, 26, and 27, 1951.

International Congress of Clinical Pathology

This will be held in London, July 16–20, 1951, under the presidency of Sir Lionel Whitby. The scientific meetings, which will be held in English and French, are to be grouped under the headings of microbiology, haematology, morbid anatomy, and chemical pathology. Travel and hotel arrangements are in the hands of Messrs. Thos. Cook and Son, Ltd., and for all other matters the secretary is Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London, W.9.

American Academy of Forensic Sciences

The second annual meeting of the American Academy of Forensic Sciences will take place in Chicago on March 1–3, 1951. Further particulars of this meeting can be obtained from Dr. R. B. H. Gradwohl, 3514, Lucas Avenue, St. Louis 3, Mo., U.S.A.

German Society for Internal Medicine

The 57th meeting of the Deutschen Gesellschaft für Innere Medizin will be held at Wiesbaden, April 2–5, 1951, under the chairmanship of Professor M. Bürger, of Leipzig. The chief topics are the relation between hypophysis and adrenal; changes in the clinical picture of thyroid disease, lung cancer and its treatment, physical and biological basis of ultrasonic treatment, endocrine aspects of the relation between diabetes and tuberculosis. Those proposing to read papers must submit a summary before January 15. Further information can be obtained from Professor Fr. Kauffmann, (16) Wiesbaden, Städt. Krankenanstalten.

Italian Tuberculosis Congress

The 10th Italian Congress of Pulmonary Tuberculosis will take place at Naples on April 3–8, 1951. Further particulars of the Congress may be obtained from the Secretary of the Congress at the Istituto "Principi di Piemonte," Naples.

International Gynaecological Congress, 1951

The Congrès International Jubilaire de la Société Française de Gynécologie will be held in Paris on June 23–29, 1951. Further particulars may be obtained from Dr. Maurice Fabre, 1, rue Jules-Lefebvre, Paris 9e, and information regarding the exhibition at the congress from M. André Pecker, 74, boulevard Haussmann, Paris 8e.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Monday

●INSTITUTE OF NEUROLOGY, National Hospital, Queen Square, London, W.C.—December 18, 5 p.m., *"Aphasia in Children,"* by Dr. Macdonald Critchley.

INSTITUTE OF OPHTHALMOLOGY, Judd Street, London, W.C.—December 18, 5.30 p.m., *"Visual Pigments,"* by Dr. H. J. Dartnall.

●ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—December 18, 3.45 p.m., *"Analgesic Drugs,"* by Dr. C. A. Keele.

ROYAL EYE HOSPITAL, St. George's Circus, Southwark, London, S.E.—December 18, 4 p.m., *"Optics"* (Revision), by Mr. H. N. Reed.

●ROYAL EYE HOSPITAL, St. George's Circus, Southwark, London, S.E.—December 18, 5.30 p.m., *"Anatomy of the Eye and Orbit,"* by Professor T. Nicol.

Tuesday

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C., December 19, 5.30 p.m., *"Respiratory Chemistry of the Blood,"* by Professor F. J. W. Roughton, Ph.D., F.R.S.

EUGENICS SOCIETY.—At Royal Society, Burlington House, Piccadilly, London, W., December 19, 5.30 p.m., *"The Ideal of an Elite,"* by Mr. Paul Bloomfield.

INSTITUTE OF OPHTHALMOLOGY, Judd Street, London, W.C.—December 19, 5.30 p.m., *"Ocular Tuberculosis,"* by Mr. P. McG. Moffatt.

INSTITUTE OF UROLOGY (UNIVERSITY OF LONDON).—At St. Paul's Hospital, Endell Street, London, W.C., December 19, 5 p.m., *"Stress Incontinence in the Female,"* by Mr. Harland Rees.

ROYAL EYE HOSPITAL, St. George's Circus, Southwark, London, S.E.—December 19, 5 p.m., *"Science and Art of Refraction,"* by Dr. T. H. Whittington.

Wednesday

INSTITUTE OF UROLOGY (UNIVERSITY OF LONDON).—At St. Paul's Hospital, Endell Street, London, W.C., December 20, (1) 3.30 p.m., demonstration of museum specimens by Mr. H. G. Hanley; (2) 5 p.m., *"Incontinence in the Male, Atony of the Bladder, and Enuresis,"* by Mr. D. I. Williams.

ROYAL EYE HOSPITAL, St. George's Circus, Southwark, London, S.E.—December 20, 4 p.m., *"Clinical Ophthalmology"* (Revision), by Mr. R. A. Burn and Mr. R. P. Crick.

Thursday

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.; December 21, 5.30 p.m., *"Respiratory Chemistry of the Blood,"* by Professor F. J. W. Roughton, Ph.D., F.R.S.

INSTITUTE OF UROLOGY (UNIVERSITY OF LONDON).—At St. Paul's Hospital, Endell Street, London, W.C., December 21, 5 p.m., *"Infertility in the Male,"* by Mr. A. R. C. Higham.

ROYAL EYE HOSPITAL, St. George's Circus, Southwark, London, S.E. —December 21, 5 p.m., *"Methods of Examination,"* by Mr. C. M. Shafto.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—December 21, 4.30 p.m., lecture-demonstration on psychiatry by Dr. M. A. Partridge.

APPOINTMENTS

CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE.—The following appointments at the hospitals indicated in parentheses are announced: *Consultant Venereologist*, Joan Halstead, M.B., Ch.B. (General Hospital); *Resident Anaesthetist*, T. R. Bomonji, M.R.C.S., L.R.C.P. (General Hospital); *Casualty Officer*, W. E. O'Hara, M.D. (General Hospital); *Junior Obstetrical Registrar*, D. J. Cassidy, M.B., B.S. (Mayday Hospital); *Obstetrical House Officer*, A. K. Doust, M.R.C.S., L.R.C.P. (Mayday Hospital); *Assistant Medical Officer (Surgical)*, D. O'Keeffe, M.B., B.Ch. (Mayday Hospital); *Anaesthetist Registrar*, Mary Connolly, M.B., B.Ch. (Mayday Hospital); *Casualty Officer*, D. W. Heustis, M.D. (Mayday Hospital); *Consultant Radiologist*, D. W. Seth-Smith, M.R.C.S., L.R.C.P., D.M.R. (Croydon Group).

DUIGNAN, JAMES, M.B., B.Ch., D.P.H., Assistant County Medical Officer of Health, County Mayo, Eire.

MILLER, R. G., M.B., M.R.C.P., Resident Medical Officer, Manchester Royal Infirmary.

SMYTH, MICHAEL J., M.Ch., F.R.C.S., Consulting Surgeon to the Jockey Club; Consulting Surgeon to the National Hunt.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Beaton.—On November 13, 1950, to Betty (formerly Dr. Elizabeth S. Bayne), wife of Donald Beaton, M.B., Ch.B., D.A., 92, Bonnymuir Place, Aberdeen, a daughter.

Davidson.—On November 3, 1950, at Nicosia General Hospital, to Helen Audrey Davidson, M.B., B.Ch., B.A.O. (formerly Lynas), wife of Mr. Malcolm Norman Davidson, Colonial Administrative Service, Cyprus, a daughter.

Hingston.—On November 9, 1950, at Leeds, to Dr. Etheline (formerly Brady), wife of Dr. James Hingston, 19, Bainbrigge Road, Headingley, Leeds, a daughter.

Sloan.—On December 7, 1950, to Mairi, wife of Dr. J. Burnley Sloan, High Corner, Ardnave Crescent, Bassett, Southampton, a son—Gordon Burnley.

MARRIAGES

Pearce—Thompson.—On December 2, 1950, at Llanishen, Cardiff, Douglas John Pearce, M.B., B.S., to Margaret Patricia Thompson, S.R.N.

Sidebotham—Jefferies.—On December 2, 1950, at Wilmslow Parish Church, Robert Noël Sidebotham, M.B., B.S., to Patricia Mary Jefferies, M.C.S.P.

DEATHS

Barford.—On November 29, 1950, in hospital, James Leslie Barford, M.R.C.S., L.R.C.P., D.P.M., of 2, Earlswood Road, Redhill, Surrey.

Benton.—On December 5, 1950, at Broughton Corner, Thornton Road, Thornton Heath, Surrey, William Benton, M.R.C.S., L.R.C.P., D.P.H., J.P., also of 35, Robson Road, Worthing, Sussex, aged 82.

Caldwell.—On December 3, 1950, at St. Albans, Alfred George Caldwell, M.D., D.P.H.

Evans.—On November 26, 1950, at Crowell, Oxford, Jessie Downie Granger Evans, M.D.

Howat.—On November 26, 1950, at Westminster Hospital, William Howat, M.B., Ch.D., of Leyton, London, E.

Hutchinson.—On December 2, 1950, at Highbury, Walmersley, Bury, Gladys Hilda Hutchinson, M.B., Ch.B.

Purdon.—On December 1, 1950, at his home, Kensington, London, William Brooke Purdon, D.S.O., O.B.E., M.C., M.B., B.Ch., D.P.H., Major-General, A.M.S., retired, aged 68.

Rankin.—On November 16, 1950, at Southport, Lancs, John Rankin, M.B., F.R.C.S.I., aged 77.

Russell.—On November 27, 1950, Henry Bret Russell, M.D., M.R.C.P., aged 55.

Walcot.—On November 24, 1950, at a North Finchley nursing-home, Thomas Walcot, M.D., aged 87.

EPIDEMIOLOGICAL NOTES

Poliomyelitis

Notifications of poliomyelitis in the week ending December 2 were: paralytic, 90 (111); non-paralytic, 38 (19); total, 128 (130). The figures for the previous week, compared with which there was a total decrease of 2, are in parentheses.

Uncorrected notifications for the corresponding week in 1947 and 1949 totalled 106 and 157 respectively. Total uncorrected notifications for 1950 up to and including the week under review are 8,379. The corresponding figures for 1947, 1948, and 1949 are 8,927, 2,272, and 6,483 respectively.

County areas with the most numerous notifications were Devon 6, Gloucester 10, Lancs 12, Southampton 6, Surrey 10, and West Riding 10. The decrease in the week ending December 2 is insignificant and disappointing in view of the large fall in the previous week.

Discussion of Table

In *England and Wales* a further increase was reported in the very high incidence of measles 1,211, whooping-cough 204, and dysentery 152. A rise of 97 occurred in the number of notifications of scarlet fever, but, in relation to the incidence in former years, this disease is at a low level. A fall in incidence was recorded for acute pneumonia 68, acute poliomyelitis 19, and diphtheria 15.

The largest rises in the number of notifications of measles were Lancashire 512, Middlesex 215, Essex 101, while the chief exception to the rising trend was a decrease of 107 in Surrey. A small rise in the incidence of whooping-cough was general throughout the country; the outstanding exception to the increasing trend was a fall of 106 in Yorkshire West Riding. The increase in the incidence of scarlet fever was due to a small rise in most sections of the country. The chief variations in the returns for diphtheria were falls in Yorkshire West Riding 9, Lancashire 8, Glamorganshire 5, and a rise of 4 in London.

The largest rises in the number of notifications of dysentery were Lancashire 63, Leicestershire 36, and Wales 26. The largest returns for dysentery during the week were Lancashire 129 (Manchester C.B. 22, Southport C.B. 16, Prestwich M.B. 15, Great Harwood U.D. 14, Middleton M.B. 10, Urmston U.D. 8); Leicestershire 76 (Leicester C.B. 63); Yorkshire West Riding 52 (Dewsbury C.B. 14, Saddleworth U.D. 14); Durham 39 (Darlington C.B. 13, South Shields C.B. 13); Monmouthshire 29 (Abercorn U.D. 17, Newport C.B. 9); London 28; Cheshire 28; Surrey 23 (Surbiton M.B. 18); Essex 23 (Romford M.B. 17); Shropshire 21 (Whitchurch U.D. 11); Northumberland 20 (Newcastle-upon-Tyne C.B. 11); Nottinghamshire 16 (Mansfield M.B. 12); Northamptonshire 15 (Kettering M.B. 14); Middlesex 12; Gloucestershire 12 (Thornbury R.D. 7); Cumberland 12; Caernarvonshire 12 (Bangor M.B. 8); Carmarthenshire 10 (Llandovery M.B. 8).

The largest returns of acute poliomyelitis were Surrey 9, Lancashire 9, Devonshire 8, Gloucestershire 8 (Bristol C.B. 8), Yorkshire West Riding 8.

In *Scotland* infectious diseases were more prevalent during the week, and increases occurred in the number of notifications of whooping-cough 110, measles 79, diphtheria 16, and dysentery 11. The largest increases in diphtheria were Glasgow 7 and Lanark county 5. The number of notifications of dysentery in Glasgow fell from 103 to 64, and rises were recorded in Edinburgh from 9 to 36, and in Dundee from 4 to 14. The other important centre of dysentery was Lanark county 17.

In *Eire* rises occurred in the number of notifications of measles 60, whooping-cough 14, diarrhoea and enteritis 12, and a fall of 34 was recorded for scarlet fever. A decline in the incidence of scarlet fever occurred in the country generally with the exception of Dublin C.B.

In *Northern Ireland* a rise of 85 in the notifications of measles and of 15 for scarlet fever were the chief features of the returns. The largest rise for measles was 32 in Armagh county.

Week Ending December 2

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,434, whooping-cough 4,458, diphtheria 45, measles 12,323, acute pneumonia 497, acute poliomyelitis 128, dysentery 856, paratyphoid fever 8, and typhoid fever 1.

Quarterly Returns for Northern Ireland

The birth rate during the March quarter of this year was equivalent to an annual rate of 21.3 per 1,000, and was 1.2 below the average of the five preceding first quarters. The infant mortality was 44 per 1,000 registered births, and was 21 below the average of the corresponding quarter for the five preceding years. The general death rate was 13.3 per 1,000, and was 2.0 below the five-year average. Deaths from pulmonary tuberculosis numbered 152, and 36 from other forms of tuberculosis. These were 45 and 2 below the number registered in the first quarter of 1949. Of the 113 deaths attributed to the principal epidemic diseases, 75 were due to influenza, 21 to diarrhoea and enteritis, and 11 to whooping-cough.

No. 47

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 25.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each Infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1950 (a)	(b)	(c)	(d)	(e)	1949 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Meningococcal infection	37	5	16	3	2	32	4	11	2	2
Deaths		2	1				1	—		
Diphtheria	61	10	25	9	1	121	18	28	3	9
Deaths	1	1	—	—	—	1	—	—	—	—
Dysentery	626	28	164	2	6	144	25	88	—	—
Deaths		—			—				—	—
Encephalitis, acute	5	—	—		—	1	—	—	—	—
Deaths		—		—			—			
Erysipelas			31	7	2			27	5	3
Deaths							—			
Infective enteritis or diarrhoea under 2 years				32	30				33	
Deaths	9		6	—	2	21	1	8	2	4
Measles*	11,343	827	191	164	142	1,467	28	39	200	87
Deaths†		—	—	—	—			—	1	—
Ophthalmia neonatorum	45	5	9		—	31	3	9	1	—
Deaths										
Paratyphoid fever	7	2	—		—	11	1	1 (B)	—	—
Deaths	—		—		—	—	—	—	—	—
Pneumonia, influenzal	490	33	8		15	710	51	2	2	7
Deaths (from influenza)‡	24	3	6	—	2	35	9	3	—	—
Pneumonia, primary	207	26	198	¶ 8	9	303	67	266	27 11	5
Deaths										
Poliomyelitis, acute	130	4	10	5	—	193	24	6	8	1
Deaths§	6	—		—		21	8			
Puerperal fever			2				—	9		
Deaths										
Puerperal pyrexia‖	48	4	13		—	87	7	6	—	—
Deaths							—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,483	101	198	75	63	2,827	224	365	154	341
Deaths†		—	—	1	—			—	—	—
Smallpox	—	—	—		—	—	—	—	—	—
Deaths					—				—	—
Typhoid fever	3	—	1	1	1	11	—	1	14	—
Deaths	—	—	—		—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths					—				—	—
Whooping-cough	4,334	376	606	55	27	1,035	43	63	66	67
Deaths	5	—	—	—	—	1	—	—	—	—
Deaths (0–1 year)	210	31	47	15	9	288	32	45	23	11
Deaths (excluding stillbirths)	5,321	819	736	183	159	5,730	995	683	193	148
Annual death rate (per 1,000 persons living)			14·8					13·7	12·0	
Live births	6,543	1062	800	293	185	6,938	1109	867	333	233
Annual rate per 1,000 persons living			16·1					17·4	20·6	
Stillbirths	188	28	24			142	16	31		
Rate per 1,000 total births (including stillborn)			29					35		

* Measles is not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

¶ Primary pneumonia no longer notifiable in Eire.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Hypersensitivity after B.C.G.

Q.—*I am a final-year student and persistently Mantoux negative. I have been offered B.C.G. vaccination and would be glad to avail myself of the opportunity. However, I am due to do a tuberculosis course at a sanatorium in four months' time. If I have my inoculation in the next few weeks, will I be hypersensitive to tuberculous infection when I do my course?*

A.—An individual who is given B.C.G. vaccine while incubating a virulent tuberculous infection, or who is exposed to such an infection during the pre-allergic phase following vaccination, appears to run no greater risk of serious disease than if he had not been vaccinated. Nor is there evidence of any hypersusceptible phase following Mantoux-conversion due to B.C.G. vaccination. The purpose of separating a vaccinated person from a known infective case is to preserve the reputation of B.C.G. vaccination rather than the subject. When carried out, segregation is usually from six weeks before vaccination until six to twelve weeks after, so that the physician can know both that the individual was tuberculin-negative sufficiently long after the contact had been broken to have escaped natural infection therefrom, and that he has become tuberculin-positive (from B.C.G.) before he resumed contact. By these tokens the questioner, if vaccinated successfully in the next few weeks, will have had his tuberculin-conversion demonstrated before starting his sanatorium course, and will thereafter have some degree of protection.

Small Temperature Swings in Spinal Tuberculosis

Q.—*What is the significance of a small but persistent daily temperature swing (97.2 to 98.8° F.—36.2 to 37.1° C.) in a patient suffering from spinal tuberculosis? A lumbar abscess complicated by a sinus has subsided, and the sinus has ceased to discharge. The blood sedimentation rate is within normal limits, and the radiological appearance of the diseased vertebrae is satisfactory. I may add that the patient has had this temperature swing for the last two years, while undergoing immobilization on a plaster bed to which he is still confined.*

A.—The disease in this patient is in all probability quiescent. But it is wise in such a case to continue immobilization on the plaster bed for three months after first obtaining a satisfactory sedimentation rate and radiograph. If the sedimentation rate and radiological appearances remain satisfactory and the sinus keeps dry, the small temperature swing mentioned may be disregarded.

Causes of Kerato-conjunctivitis

Q.—*What is the aetiology of non-specific kerato-conjunctivitis? Is there any association with tuberculosis?*

A.—The causes of kerato-conjunctivitis are many; some are known, and about others we are at present ignorant. Often there are several aetiological factors. Kerato-conjunctivitis is sometimes associated with systemic disorders of endogenous origin and with a number of skin diseases such as acne rosacea, seborrhoeic dermatitis, pemphigus, and others. Superficial punctate keratitis occurs in epidemic form in India and Malaya, and indeed it did so in London in 1930–1; it is then associated with an acute but transitory infection of the upper air passages, and is thought to be due to a filter-passing virus. Some cases of kerato-conjunctivitis are bacterial in origin and some are due to neurotrophic causes, as when the Gasserian ganglion is diseased. The disease may also appear during the acute exanthemata and influenza. It may result from exposure of the cornea due to absence of blinking in severe illness and unconsciousness or to failure of the upper lid to cover the cornea.

The condition may also arise from such industrial hazards as electric short-circuit flashes; exposure of the unprotected eyes in acetylene welding and to ultra-violet-light lamps; the irritation of chemical fumes and dust; and in the manufacture of artificial silk. Kerato-conjunctivitis is evident in so-called "snow-blindness," when the injurious agent is thought to be ultra-violet rays reflected by snow fields at high altitudes. Some people are very sensitive to aniline dyes, and in such paraphenylene diamine, which is used in certain eyelash cosmetics, may cause a very severe kerato-conjunctivitis. A number of articles such as jequirity seeds,* used for self-inflicted eye injuries, induce kerato-conjunctivitis, and in war mustard gas causes characteristic lesions of the bulbar conjunctiva and cornea.

Kerato-conjunctivitis may also occur in arsenical poisoning associated with exfoliative dermatitis, and when chrysarobin is administered for skin diseases.

Phlyctenular kerato-conjunctivitis is a tuberculo-allergic manifestation which may be associated with a healed tuberculous lesion, and occurs in children and young adults with a family history of tuberculosis. Those affected by this disease are often living in poor hygienic conditions; they are often in a low state of health, indulge in a diet with carbohydrate excess, and have lymphoid hyperplasia of their tonsils and adenoids and some upper respiratory infection.

Blindness and Heredity

Q.—*What are the hereditary causes of blindness, and at what ages does hereditary blindness usually occur? What are the chances of transmitting these diseases?*

A.—There are a large number of hereditary diseases that lead to blindness. Some produce gross visual defect or total blindness from congenital anomalies, others are abiotrophic in character—i.e., the eye is normal at birth and for some years subsequently, when degenerative changes set in and progress, leading to blindness in early life or very much later, the time depending on the affection. Microphthalmos is typical of the first group and retinitis pigmentosa of the second. Whether a particular form of hereditary disease is transmitted or not depends on the mode of inheritance. In recessive affections transmission of the disease occurs only under exceptional conditions; with a regular dominant mode of inheritance 50% of the offspring are likely to be affected; in recessive sex-linked affections the children of an affected man will not be affected, but 50% of his daughters' sons will be affected. Further information on this subject will be found in *Genetics in Ophthalmology* (Butterworth, London), by Professor Arnold Sorsby.

Ultra-violet Light and Children

Q.—*Will regular ultra-violet-light baths help normal healthy children, from 1 to 4 years old, to resist the common cold and other infections? Are there any contraindications? Can you suggest dosage for these ages?*

A.—The only extensive controlled survey of the value of ultra-violet light in the prevention of colds was that carried out by Dora Colebrook under the auspices of the Medical Research Council (*Industrial Health Research Board Report*, No. 89, H.M.S.O.). The work applied to adults only and showed that as a prophylactic ultra-violet light had no demonstrable value. There seems to have been no corresponding survey in children, but there is no reason to believe that a "normal healthy child" will react differently from an adult. On the other hand many clinicians believe that under-developed children with poor appetites and a tendency to respiratory infections are less liable to develop colds if given regular courses of ultra-violet light. This is a clinical impression only. Ultra-violet light sometimes aggravates an already existing cold and should temporarily be discontinued if a cold develops during the course of treatment, otherwise there are no obvious contraindications to its use in *healthy* children. The dosage for a child between the ages of 1 to 4 is half the normal adult dose recommended by the makers of the lamp.

*Jequirity, or the poisonous seeds of *Abrus precatorius*, contains an active principle called abrin, which is a toxalbumin similar to ricin and to snake venom. This has no action by mouth if the mucous membrane is intact, but when injected into the skin or applied to the surface of a wound urgent symptoms of collapse occur. These are accompanied by local inflammation and oedema, and capillary thrombosis and haemorrhage, and are often followed by death.

Leucoderma

Q.—*Has there been any recent advance in the treatment of leucoderma? Does pregnancy affect the condition?*

A.—There is as yet no effective treatment for leucoderma. Pregnancy may affect the condition for better or worse. It is an expression of disturbance of pigmentary function which appears in the majority of cases to be due to emotional, nervous, or endocrine influences, not of a gross nature nor, unfortunately, amenable to treatment. Recovery may occur spontaneously.

Meat and Chicken Soups

Q.—*What nutritive value have meat and chicken soups?*

A.—The composition of a meat or chicken soup will naturally depend on the relative amounts of water and of meat or chicken which have been used in its preparation. Even the most concentrated soups, however, contain little in the way of nutrients. One plateful (one-third of a pint or about 200 ml.) might contain, as a maximum, about 5 g. protein, 1 g. fat, and 3 g. carbohydrate, which together would yield about 40 calories. It may also contain a little vitamin B_1, riboflavin, and nicotinic acid, but not more than one-tenth of the daily requirements of these. The chief components that give the flavour are the soluble salts and extractives. The former are too small in quantity to contribute appreciably to the needs of the body. The extractives include very little urea, but appreciable amounts of creatine and creatinine, each of which may amount to 1 g. in a portion.

If we are interpreting nutritive value rather more widely, we should mention two further points. First, soups, taken as they are in the early part of the meal, stimulate appetite, and may thus indirectly improve the dietary. Secondly, when a meat or chicken soup is used as a base for a thick soup made with, say, pulses or potatoes, and to which has perhaps been added small pieces of meat or chicken, it is clearly possible to obtain a dish of quite high nutritive value.

Inheritance of Epilepsy

Q.—*A married woman, whose aunt suffers from epilepsy, wishes to have children. What risk is there that a child would be affected?*

A.—The risk is not appreciably greater than that for a woman with no family history of epilepsy.

NOTES AND COMMENTS

Carbon Dioxide and Asthma.—Dr. S. F. GILBERT (Manchester) writes: May I add my comments to your answer to this question ("Any Questions?" November 25, p. 1236)? While being in full agreement that such inhalations can be most harmful in some cases, and of no benefit in others, when given by uncontrolled methods, I have yet to see in my own practice any but beneficial effects. . . . At a later date I intend to submit full details of my method and results for publication.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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